

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
FORT WORTH DIVISION

UNITED STATES OF AMERICA,) CASE NO. 4:21-cr-00005-O-1
Government,) FORT WORTH, TEXAS
VS.) AUGUST 5, 2022
THE BOEING COMPANY,)
Defendant.) 9:00 A.M.

VOLUME 1 of 2
TRANSCRIPT OF EVIDENTIARY HEARING
BEFORE THE HONORABLE REED C. O'CONNOR
UNITED STATES DISTRICT COURT JUDGE

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CHRISTOPHER KEYES -

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P R O C E E D I N G S

AUGUST 5, 2022

oOo

THE COURT: All right. This is Case
No. 4:21-cr-05, United States v. The Boeing Company.

So who do we have? You are here representing?

MR. CASSELL: Paul Cassell.

THE COURT: And who else do you have here?

MS. BRAUMMEIER: Tracy Brammeier, your Honor.

MS. APPLEBAUM: Erin Applebaum.

MR. HILTON: And Chase Hilton.

THE COURT: Very good.

MR. CASSELL: And with the Court's permission,
your Honor, I want to introduce Zekarias Shenkuh, whose
brother, Mulugeta Shenkuh, was killed in the crash, and has
traveled here today.

THE COURT: Thank you for being here.

And do you have your witness?

MR. CASSELL: We do have our witness.

THE COURT: Let's go ahead and get your witness up
here while we let everyone else identify here.

MR. HATCH: Good morning, your Honor. Ben Hatch,
McGuireWoods, on behalf of The Boeing Company.

MR. HANEY: Patrick Haney from Kirkland & Ellis
for Boeing.

1 MR. SANTOS: Brandon Santos, McGuireWoods, for
2 Boeing. Good morning, your Honor.

3 MR. HATCH: Ian Hatch, Kirkland & Ellis.

4 THE COURT: Good to see you, Ian.

5 MS. BAUR: Elissa Baur.

6 THE COURT: Very good.

7 MR. JACOBS: Cory Jacobs with Chad Meacham and our
8 paralegal, Katie Holbrook, for the United States. Good
9 morning, your Honor.

10 THE COURT: Thank you all for being here.

11 Are you the witness?

12 THE WITNESS: Yes, sir.

13 THE COURT: Would you raise your hand, please, to
14 be sworn?

15 MR. CASSELL: Your Honor, if I could be heard just
16 briefly, I have two preliminary issues that surfaced that
17 might expedite today.

18 THE COURT: Yes.

19 MR. CASSELL: The first is we've just been
20 informed that Boeing is intending to cross-examine witnesses
21 in this case. In our view, the very narrow hearing today is
22 to establish the standing of the families to receive their
23 rights from the United States Department of Justice. Boeing
24 has no interest in that narrow issue and lacks standing to
25 be heard today.

1 Of course, if the Court were to rule that the
2 families are victims, and then remedies and other things
3 might be in play, we would obviously agree Boeing could be
4 heard. So, in our view, they have no standing to be heard
5 today.

6 I would point out, by the way, on the issue of
7 victim status, all of Boeing's briefs have one sentence on
8 that issue, and it says, "We agree with the government."

9 So they have not established any separate
10 interest. We believe it would significantly expedite
11 today's proceedings if it was kept between the parties who
12 have an interest, the government and the families.

13 THE COURT: Okay. And did you have another point
14 or --

15 MR. CASSELL: The second point is we haven't --
16 depending on who's participating, we still don't know what
17 the issues are that are in dispute. We have provided, as
18 your Honor knows, a very extensive proffer.

19 We've provided three expert reports. I think many
20 aspects in the proffer, many aspects in the victims' report
21 aren't disputed, but nobody is talking to us about what is
22 in dispute. If we could get some clarity on that point, I
23 think we could expedite this hearing.

24 THE COURT: Okay. Mr. Meacham, what do you say to
25 all that?

1 MR. MEACHAM: I'm going to defer.

2 THE COURT: Whoever is taking the lead, what do
3 you all say to that?

4 MR. JACOBS: With respect to that first issue,
5 your Honor, we would defer to The Boeing Company, although
6 we do think the defendant in this case does have an
7 opportunity to be heard and should be able to cross-examine
8 whatever witnesses that Mr. Cassell would like to proffer to
9 the Court.

10 With respect to the second issue, I think at this
11 point, we just need to wait and see what is presented.
12 Obviously, Mr. Cassell, through his experts, intends to show
13 that the crash victims were directly and proximately harmed
14 as a result of the offense that was charged in the DPA. Of
15 course, we dispute that fact, but we need to see exactly
16 what comes out during their testimony.

17 Although I would note, at least for the witness
18 that's going to testify today, this witness, I anticipate,
19 is going to take the position that, had the Aircraft
20 Evaluation Group and the FAA had the complete dataset, that
21 that would have impacted their training decision.

22 We dispute that and are prepared to cross-examine
23 the witness as to that particular conclusion today. As well
24 as for the record, your Honor, just one other thing, we
25 would note that it's our view that, although the witness

1 that is going to testify today is certainly well qualified
2 as a pilot, certainly worked at the FAA, that that witness
3 is not qualified to actually render the opinion that the FAA
4 would have done something had they known more information.

5 We think that's beyond what this expert could
6 testify to. And so he isn't actually qualified to testify
7 to that particular opinion about what the FAA, the federal
8 regulatory agency, would have done.

9 So in a way, we challenge this witness with
10 respect to Daubert. We don't think that this witness is
11 someone who's qualified to actually render the particular
12 opinion that he's prepared to give today. That's our
13 position.

14 Thank you, your Honor.

15 THE COURT: Okay. I will hear from him and take
16 that issue up at the end --

17 MR. JACOBS: Thank you.

18 THE COURT: -- the last issue you pointed out.

19 MR. JACOBS: Thank you.

20 MR. HATCH: Thank you, your Honor. As to the
21 first issue about our participation, I'm surprised by
22 Mr. Cassell's position on that.

23 As the Court knows, we briefed every stage of
24 these issues. We are a party to this case, and these
25 proceedings directly affect our interests. I think, from a

1 fundamental due-process standpoint, we have the right to
2 cross-examine witnesses who are presented in a case, the
3 relief of which directly impacts our client, the requested
4 relief, which would be to undo the DPA in the agreement and
5 to take other actions that directly affect our interest.

6 On pages 2 of 5 on our response to the motion, we
7 agree with the government's assessment that the movants do
8 not need the CVRA definition and have standing, and we
9 adopted their reasons for that and stated that the request
10 could be denied on that basis alone.

11 And I believe in his response at Docket 65, on
12 page 10 at least, Mr. Cassell has acknowledged our joining
13 in arguments in that regard as to the government. So we
14 have presented these arguments. The issues directly affect
15 our interest.

16 I will say to the Court, like Mr. Jacobs, we
17 respectfully don't believe that this expert could meet the
18 Daubert standard.

19 Our intention would be for cross-examination,
20 certainly, to go after the government and to reduce our
21 cross-examination so it's not repetitive or duplicative of
22 the government.

23 And with the Court's permission, we could
24 certainly ask questions on the front end about the Daubert
25 standard, but we're also prepared to reserve all those. If

1 the Court understands we are objecting on Daubert grounds,
2 we can reserve those for a unitary cross at the end.

3 THE COURT: What do you say, though, to
4 Mr. Cassell's argument that you're not affected at all,
5 whether they meet the standard under the CVRA of the
6 victim -- crime victim, I should say, under CVRA, or not,
7 has no effect on The Boeing Company?

8 MR. HATCH: Respectfully, your Honor, it does
9 affect us. Because, in litigation, in my experience, you
10 don't part -- what they have to do to the movants to
11 establish the relief they're requesting, as the Court, I
12 think, has laid out in its recent opinion, is first
13 establish standing under the CVRA, then, presumably
14 establish a violation, and then establish an appropriate
15 remedy.

16 That is all part and parcel of the motions that
17 they filed to which both we and the government have
18 responded as parties in this case. It's part of their case
19 to obtain relief that directly affects my client.

20 THE COURT: Right. And I guess -- and I
21 understand that -- I guess what I'm wondering, though, is
22 that, if they do not meet the definition of crime victim in
23 the CVRA, you're in the same position you were in -- you
24 have been in all along.

25 If they do meet the definition of crime victim

1 under the CVRA, and that's all I'm determining, you're still
2 in the same position you have been in since the case has
3 begun, because there's nothing -- on that narrow issue,
4 there's nothing that Boeing has to do differently, whether
5 they meet the definition or don't meet the definition. I
6 think that's the argument that he's making.

7 And then what I understand him to say is, if I
8 were to find that they are -- that they do meet the
9 definition, and then I were to conclude we should consider
10 what -- if they do meet the definition, if I were to
11 conclude, okay, what should we do about the agreement?
12 Should we set it aside? Should we say too much time has
13 passed? Whatever.

14 Then your interests are directly affected such
15 that you should be a full participant in any of those
16 hearings and present evidence, arguments, and that sort of
17 thing. I think that's what his argument is.

18 And so, as it relates to the first thing -- so
19 there's two steps. As it relates to the first step, he's
20 saying you really ought not be able to participate and
21 cross-examine his witness on step one.

22 MR. HATCH: Yes. And certainly, your Honor, under
23 the CVRA, The Boeing Company has, as I understand the
24 statute, no direct obligation to a crime victim. That is an
25 obligation imposed on the government.

1 But here -- and, certainly, if you're in, say, a
2 civil case where there are multiple defendants and an
3 argument is presented that would only affect one defendant,
4 that might be one thing. But in this case, the motions that
5 are filed are motions that request relief that directly
6 affects my client, regardless of whether -- the fact that we
7 didn't commit a violation, we couldn't commit a violation,
8 that is what the relief is. It directly affects my client,
9 undoing the DPA.

10 This is one of the elements that they have to
11 establish to get to that relief. So I think that's where I
12 see it affecting my client is that the Court is working
13 through those elements that they have to establish the first
14 standing.

15 If they do not have standing, then the relief
16 they're requesting against my client ought not be granted.
17 If they do have standing, then they will proceed to argue
18 for other aspects of what they need to establish to
19 establish it. So that's the impact on my client.

20 THE COURT: Okay. Very good. I'm going to let
21 you ask some questions after the government. We need to get
22 started.

23 So let's get your witness on.

24 MR. HATCH: Thank you, your Honor.

25 MR. CASSELL: All right. The families call

1 Christopher Keyes.

2 THE COURT: Yes. Thank you.

3 Would you raise your hand to be sworn.

4 (The oath was administered.)

5 THE WITNESS: I do.

6 THE COURT: Please come up here and have a seat,
7 sir.

8 MR. CASSELL: And, your Honor, to speed things up,
9 at this time I'm going to offer Families' Exhibit 1, his
10 expert report, which I believe both sides have previously
11 received. It's been filed.

12 THE COURT: Exhibit 1 will be admitted into
13 evidence.

14 (Exhibit 1 was admitted into evidence.)

15 DIRECT EXAMINATION

16 BY MR. CASSELL:

17 Q. If I might briefly approach?

18 All right. Good morning, sir. Could you state
19 your name for the record, spelling your last name, please?

20 A. Christopher Keyes. K-e-y-e-s.

21 Q. And I've handed to you what's been accepted as
22 Families' Exhibit 1. Do you recognize that document there?

23 A. I have Exhibit 2.

24 Q. It's funny, yeah, it's Exhibit 2 in our proffer to
25 the Court, but for purposes of today's hearing, I will be, I

1 guess somewhat confusingly, referring to it as Exhibit 1.

2 So if you flip into the second page of that
3 document --

4 A. Yes, sir.

5 Q. -- do you recognize that document then?

6 A. Yes, I do.

7 Q. I wonder if I could direct your attention towards
8 the back of that particular document. There's a section,
9 and I think it's entitled "Qualifications," which describes
10 your background.

11 A. Yes, sir.

12 MR. CASSELL: And, your Honor, since it sounds
13 like qualifications are at issue here, I would be ready to
14 simply proffer his CV.

15 THE COURT: Any objection?

16 MR. JACOBS: No objection.

17 MR. HANEY: No objection.

18 MR. CASSELL: Should I walk through? I mean --

19 THE COURT: However you want to. I mean, I've
20 read -- skimmed through what you've submitted, but I will
21 defer to you on what you -- you've heard what they're about
22 to argue.

23 MR. CASSELL: Right. And I --

24 THE COURT: So you could go to that point, if you
25 would like, but I don't want to limit you from presenting

1 anything that you feel like you need to present.

2 MR. CASSELL: Thank you, your Honor.

3 I'm wondering if we could handle it this way, I
4 would propose that I simply dive into the substance of his
5 testimony. They may then cross-examine about aspects, and
6 if I could be granted latitude on reply to deal with that,
7 that --

8 THE COURT: Yes.

9 MR. CASSELL: And again, maybe we would narrow
10 down the issues in dispute.

11 THE COURT: Do you have any objection to that?

12 MR. JACOBS: No, your Honor.

13 MR. HANEY: No, your Honor.

14 THE COURT: All right. Thank you. Proceed.

15 BY MR. CASSELL:

16 Q. Mr. Keyes, I guess we can now go back to the main
17 body of your report. And as I see it there, there are a
18 number of opinions that you're planning to offer today?

19 A. Yes, sir.

20 Q. To set the stage for today's hearing, I would like
21 to ask you four questions. First, is it your opinion, to a
22 reasonable degree of aeronautical certainty that, had Boeing
23 provided the AEG with the complete dataset with regard to
24 MCAS for the 737 MAX, that AEG would have determined that
25 the changes warranted a higher level of differences training

1 involving simulators?

2 A. Yes, they would.

3 Q. My second question is, is it your opinion today,
4 to a reasonable degree of aeronautical certainty that, all
5 operators, both domestic and foreign of the 737 MAX, depend
6 on the FAA for appropriate and accurate information
7 regarding aircraft that they approve and the training they
8 recommend?

9 A. It is.

10 Q. My third question is, is it your opinion today to
11 a reasonable degree of aeronautical certainty that, the act
12 of withholding critical information regarding MCAS rendered
13 the applicable sections of the 737 MAX aircraft flight
14 manual and checklist unusable?

15 A. I believe so, yes.

16 Q. And my fourth question to set the stage is, is it
17 your opinion today, to a reasonable degree of aeronautical
18 certainty, that the lack of appropriate or incomplete MCAS
19 training put every crew member and passenger on board every
20 Boeing 737 MAX at an unwarranted risk for a catastrophic
21 event every time they took off?

22 A. That is my opinion.

23 Q. All right. Well, with those opinions in mind --
24 and I understand the parties may be challenging some issues
25 about how you reached those opinions -- if I could direct

1 your attention to Appendix D in your report, which is, I
2 believe, entitled "References"?

3 A. Yes, sir.

4 Q. And I kind of -- what I wanted to know again,
5 since there appears to be a challenge to the basis for you
6 reaching those opinions, let's walk through some of the
7 items here.

8 I see Item 1 is a, "Final Committee Report
9 Regarding the Design, Development, and Certification of the
10 Boeing 737 MAX"?

11 A. Yes, that is on there.

12 Q. And could you briefly describe what that document
13 is?

14 A. Basically, that was information gathered by
15 staffers for Congress looking into the issue of the 737 MAX
16 and their detailed report. I looked at various sections of
17 it. Especially the training portion of that report.

18 Q. And my understanding is that the House Committee
19 on transportation spent 18 months investigating the 737 MAX,
20 collecting 600,000 pages of documents connected with that
21 issue. Is that generally your understanding?

22 A. That is my understanding.

23 Q. Now, did you look at all 600,000 pages in reaching
24 your opinions here?

25 A. No, I did not.

1 Q. And I think you were mentioning there's a specific
2 section that was of greatest interest to you?

3 A. Training.

4 Q. All right. And I think that's Chapter 7, if I
5 recall correctly. Does that sound about right?

6 A. That sounds about right. I wasn't sure.

7 Q. There were also a number of emails that the House
8 Committee collected in regard to the crashes in the 737. If
9 somebody presented an email to you, would you use that in
10 part of determining your decision?

11 A. If it was determining to the subject, I would.

12 Q. So, for example, if today attorneys for the
13 government or attorneys for Boeing wanted to show you some
14 emails or information in that report, would you be glad to
15 look at that and see whether that alters your opinions in
16 any way?

17 A. Yes, I would look at them.

18 Q. All right. I want to jump down to, I think it's
19 Item 3 there. You mention that you looked at something
20 called "Republic of Indonesia Final Aircraft Accident
21 Investigation Report regarding the Boeing 737 MAX, Flight
22 610, on October 29th, 2018." Do you see that?

23 A. Yes, sir.

24 Q. Could you tell the Court what that document is?

25 A. Basically, that is an accident report. It

1 followed the basic format of ICAO, Annex 13, for the
2 development and presentation of an accident report. It
3 covered all of the usual topics, from history of the
4 aircraft, history of the pilots, communications, weather,
5 airworthiness of the aircraft, things of that nature. What
6 their training had been, survivability.

7 Q. So in the course --

8 I believe according to your CV, you were with the
9 FAA for 24 years?

10 A. I was.

11 Q. In those 24 years, did you ever see an accident
12 report of this type in the course of your duties?

13 A. Yes, sir.

14 Q. Roughly how many accident reports would you have
15 reviewed in the course of your duties?

16 A. Hundreds.

17 Q. Let's move on to the next item then. I see here
18 Item 4. There's a document entitled, "Federal Democratic
19 Republic of Ethiopia, Ministry of Transport, Aircraft
20 Accident Investigation Bureau Interim Report regarding
21 Ethiopian Airlines, 737 MAX, Flight 302." Do you see that
22 there?

23 A. Yes, sir.

24 Q. And could you tell us what that document is?

25 A. Basically, it's the same as the preceding one. It

1 was a preliminary report in a basic ICAO type of format for
2 accident reports. And starting with the synopsis and the
3 history of the flight, the crew members, aircraft, air
4 worthiness, survivability, weather, communications, and went
5 through most of that, yes.

6 Q. So that's described as an "interim report."

7 Have the Ethiopian authorities issued a subsequent
8 report since then?

9 A. Not to my knowledge.

10 Q. And is that the single best source document if
11 somebody wanted to get to the bottom of why the Ethiopian
12 Airlines, Flight 302, crashed on that particular day?

13 A. More than likely, yes.

14 Q. All right. And we will have an occasion to talk a
15 little bit more about that.

16 But then I noticed that further on down, you
17 reference as Item 5 of the materials, you considered various
18 provisions in Title 49 of the U.S. Code?

19 A. Yes, sir.

20 Q. Now, you're not an attorney, as I understand it?

21 A. No way.

22 Q. But did you have occasion, in the course of your
23 24 years of working at the FAA, to analyze how federal
24 statutes might interplay with some of your duties?

25 A. I did.

1 Q. And was Title 49 one of those statutes that you
2 worked with frequently?

3 A. It would come into my realm of responsibility
4 where I would have to review that and see if it was
5 applicable in certain cases, either in an accident or a
6 violation or an incident.

7 Q. All right. And now, the next item here is Item 6.
8 It's 14 CFR.

9 MR. CASSELL: It occurs to me, by the way, your
10 Honor, we have an extra copy of the report, if that would
11 be --

12 THE COURT: I would like that, yes.

13 MR. CASSELL: I apologize.

14 THE COURT: No. I should have brought one.

15 MR. CASSELL: With the Court's permission?

16 THE COURT: Thank you.

17 BY MR. CASSELL:

18 Q. All right. So I'm looking at -- this is an
19 Appendix B to Mr. Keyes' report which references Item 6.
20 There's a reference to 14 CFR, and that's Code of Federal
21 Regulations, and then various parts are listed there.

22 Again, could you just very briefly, for the Court,
23 describe what those various parts of 14 CFR are.

24 A. As indicated, they're -- Part 21 talks to the
25 certification process for products and articles.

1 Part 25 addresses, "Airworthiness standards for
2 transport category airplanes."

3 Part 26 was, "Continued airworthiness and safety
4 requirements for transport category airplanes," and Part 60,
5 "Flight simulator training, initial and continued
6 qualifications and use."

7 Q. Could you tell us a little bit more about Part 60?

8 What kinds of issues does that relate to?

9 A. That talks about the minimum qualifications to --
10 for a training center or an agency to use a simulator in
11 training. Pilots that are trained in accordance with
12 federal regulations, there are certain minimums that they
13 have to meet.

14 There are different levels of simulators. The FAA
15 has a simulator team that travels around the world and
16 certificates, or certifies, simulators. And they also do
17 recurrent certification to ensure that simulators are still
18 meeting the minimum standard for use in airman
19 certification.

20 Q. Now, Item 7, just briefly, what is that document
21 there -- or that item, I guess?

22 A. That is FAA Order 2150.3C. It's Federal Aviation
23 Administration Compliance Enforcement Program.

24 Q. And I see several other orders there of a similar
25 nature. I think I can tell sort of from the title the

1 general topics. Would that be correct?

2 A. Yes.

3 Q. Item 12 here is a, "Flight Standardization
4 Board" -- let me just stop right there.

5 "Flight Standardization Board," is there an
6 acronym?

7 A. FSB.

8 Q. So this is an FSB report for The Boeing Company
9 737. I take it you had an opportunity to review the current
10 737 report?

11 A. I did.

12 Q. Roughly how long is that report, or what does it
13 look like?

14 What are the general sort of subjects that are
15 covered there?

16 A. The subjects that would be covered there would be
17 the process and the procedure that the people reviewing
18 training programs would use to review a manufacturer's
19 training program, how they would apply regulations.

20 In other words, how did they -- did they meet the
21 minimum requirement of the regulations? And they would make
22 a determination of required -- minimum required training for
23 the industry to use for certification of pilots and what an
24 operator or manufacturer would have to do -- or correction,
25 an operator would have to do in order to meet the

1 requirements of the report to have their pilots properly
2 trained and meet the requirements there and get approval
3 from their principal operations inspector to use that
4 training program.

5 Q. And we mentioned -- or, I'm sorry, you mentioned a
6 moment ago you looked at the current report.

7 I take it you didn't look at the actual 737 MAX
8 report that was in effect on the date of the crash?

9 A. I did not have access to that.

10 Q. Did you have access to descriptions of that report
11 in other documents that you reviewed?

12 A. I came across numerous references to that.

13 Q. And did that give you a sufficient basis, in your
14 view, to reach opinions regarding the reports?

15 A. It did.

16 Q. And could you give the Court an example of the
17 kind of document that you were able to look at describing
18 the FSB report that existed back when the crashes occurred?

19 A. Well, there were several documents. The accident
20 reports of Lion Air and Ethiopian Air made reference to
21 training.

22 The committee report made reference to training.
23 Some of the other documents that I went through made
24 references back to training, and I would go back to the FSB.

25 Q. And the documents you just referenced, the

1 accident reports and so forth, are those the kinds of
2 documents that experts, trying to offer the kinds of
3 opinions that you're offering here today, would consult in
4 offering their opinions?

5 A. Yes.

6 Q. And then the last item here, it looks like there's
7 some ICAO documents. Again, for the benefit of the Court, I
8 know it has been involved in a number of aviation matters
9 over the last year, but just briefly, "ICAO," what is that
10 exactly?

11 A. The International Civil Aviation Organization.

12 Q. All right. And you looked at some of the annexes
13 that were relevant to the matters here?

14 A. Yes, sir.

15 Q. Okay. Well, we'll have an opportunity to go into
16 more detail in how some of these documents interact with
17 your opinions, but I wanted to get right to it.

18 I think one of your opinions is that, "All
19 operators, domestic and foreign, of the 737 MAX depend on
20 the FAA for appropriate and accurate information regarding
21 aircraft they approve."

22 I want to direct your attention to that particular
23 opinion. And the first thing I want to do in connection
24 with that is -- I think you've looked also, as part of
25 preparing for the hearing, at a Statements of Fact that the

1 government and Boeing prepared?

2 A. Yes, I did.

3 Q. I think it's got 50 some-odd paragraphs in there?

4 A. Yes, I'm familiar with it.

5 Q. Are the opinions you're offering today consistent
6 or inconsistent with those Statements of Fact?

7 A. It would be consistent with those facts.

8 Q. Now, in particular -- I know the Court doesn't
9 want us to repeat everything that's in the Statement of
10 Facts, but I just want to set the stage by directing your
11 attention to the Statement of Facts, paragraph No. 10.

12 Let me just read that to get that into the record
13 for purposes of this morning's hearing.

14 It says that, "The conclusion of the FAA's
15 evaluation of the new version of the airplane, the FAA AEG
16 published an FSB report. Among other things, the FSB report
17 contained relevant information about certain airplane
18 systems and parts that the aircraft manufacturer was
19 required to incorporate into airplane manuals and pilot
20 training materials for all U.S.-based airlines that would
21 fly the airplane."

22 Are you familiar with that Statement of Facts?

23 A. Yes, I am.

24 Q. And so, let's just drill into that a little bit.

25 There was an FSB report applicable, then, to the

1 737 MAX?

2 A. There was.

3 Q. And paragraph 10 indicates that, "This material
4 would have been then incorporated into the training
5 materials," and -- I'm sorry -- "aircraft manuals and
6 training materials for all U.S.-based aircrafts," U.S.-based
7 aircraft, I'm sorry.

8 Could you explain a little bit about how that gets
9 conveyed to U.S.-based airlines?

10 I shouldn't say "aircrafts." I meant to say
11 "airlines."

12 A. Yes. The FAA, through the FSB, has done an
13 evaluation of a -- either a new airplane or a variant of an
14 existing aircraft. They depend on -- a lot on the
15 information provided by the manufacturer to make a
16 determination of what type of training would be required for
17 that new variant.

18 They then take that information and they compile a
19 master differences rating table, which the operator would
20 look at -- the airlines would look at, and they would make a
21 determination of how best they would incorporate that into
22 their training program.

23 Incorporating that into their training program,
24 then, would consist of a change to their training program.
25 The principal operations inspector, the individual who

1 has -- is kind of the manager of that certificate for the
2 FAA, would take a look at that revision to the training
3 program.

4 He would then look at the FSB himself and look at
5 that report and ensure that the operator has included all of
6 the information required from the FSB into the new training
7 program or the revised training program.

8 If he has done -- they have done so, then the POI
9 would put his stamp of approval on that change to the
10 training program, and it would go in and begin -- they would
11 begin training the pilots on this new variant.

12 Q. All right. So that was with respect to U.S.-based
13 airlines.

14 Would the FSB report also be available to
15 foreign-based airlines?

16 A. Yes, it would.

17 Q. And how would it be made available to a
18 foreign-based airline?

19 A. It's a published document that's out there on the
20 Internet. It's available to anybody. The FAA knows -- and
21 the manufacturer would have a list of all of the customers,
22 everybody that owned that make and model of aircraft, and
23 the FAA would use their master list of who has the aircraft,
24 what airlines they're operating under, to send out
25 notification that there's been a change to the FSB. And

1 they would then go to the foreign country, and they could
2 make their determination on that.

3 The FAA is kind of considered one of the more
4 influential authorities on these matters. And in many
5 cases, foreign countries will look to the FAA for that
6 guidance.

7 In the case of an FSB, the foreign operator can
8 take that information and incorporate it into their training
9 program, in accordance with their local or their national
10 guidelines on how they conduct training.

11 And it kind of helps them along because they don't
12 have to reinvent the wheel. They don't have to go in and
13 dig all that information out. It's presented to them, for
14 the most part, because the FAA and the United States
15 aviation industry is kind of considered one of the world
16 leaders in aviation. People look to it to have confidence
17 that that information is good, and they will take and
18 incorporate it into their programs.

19 Q. You mentioned that foreign countries generally
20 might just adopt the FSB report. Are there particular types
21 of countries or aviation authorities that are probably more
22 inclined, in your view, to simply follow the FAA
23 recommendations?

24 A. I would think that a country that did not quite --
25 have quite the resources, either in personnel experience or

1 financial resources, might lean more on the FAA for
2 information, as opposed to having to spend the time to
3 develop it on their own.

4 Q. Now, you've been describing how American decisions
5 by the FAA would be transmitted or perhaps followed by
6 foreign-based airlines. Is that something that's a top
7 secret piece of information, or is that something that's
8 generally known in the aviation industry?

9 A. It's generally known.

10 Q. And are you familiar with a company known as The
11 Boeing Corporation?

12 A. I am.

13 Q. And is this the kind of information that would
14 have reached The Boeing Corporation in the course of its
15 normal affairs of building aircraft and selling them to
16 customers?

17 A. Oh, yes.

18 Q. I think I saw in your report that you mentioned
19 that the FSB report is "a single-source document" that a
20 foreign-based airline could look to.

21 Could you help me understand what you mean by
22 "single-source document"?

23 A. It's a primary document that has gone into the
24 differences of an aircraft, different variations. They've
25 done all the legwork. They've worked closely with the

1 manufacturer. In some cases, they actually get into the
2 simulator and test it out and they make that determination.

3 And once again, that's public knowledge. It's not
4 top secret. Anybody can have that. So it would be one
5 place to go. I'm not aware of anyplace else that would have
6 that information or develop that information.

7 Q. So a country like Indonesia, when they buy an
8 American aircraft, are they going to, as you say, reinvent
9 the wheel and start from scratch on these types of issues?

10 A. No. They're going to take the information that's
11 available to them. I'm sure the manufacturer is going to
12 provide a lot of technical support in the way of
13 airworthiness. Any training that needs to be done for their
14 people, they would do that.

15 The FSB comes in there when they start talking
16 about the training for pilots. And that's where the
17 determination is made there.

18 Q. Would it be fair to say, when foreign countries or
19 foreign operators are looking at this information from the
20 FAA, that they would be expecting that it would be
21 appropriate and accurate information?

22 A. Yes.

23 Q. And you were mentioning the FAA is regarded as one
24 of the preeminent authorities. I'm assuming that one of the
25 reasons Americans can be proud of the FAA is, generally, the

1 information they're transmitting is appropriate and
2 accurate?

3 A. Yes.

4 Q. All right. Well, let me turn now to the next
5 opinion that I want to talk about. We will have a few
6 more -- we will get into some specifics when we start
7 looking into the specific crashes. But right now, let's
8 kind of look at a general level.

9 The next opinion I want to talk about is that,
10 "The act of withholding critical information regarding
11 MCAS" -- and just for the record, I think everybody at this
12 point is well aware that MCAS is Maneuvering Capabilities
13 Augmentation System, a software system in the 737 MAX --
14 "rendered the applicable sections of the 737 MAX aircraft
15 flight manual and checklist unusable."

16 Did you see in the materials you reviewed
17 references to the flight manuals and checklists that existed
18 on the 737?

19 A. I did.

20 Q. And I also was able to say what MCAS means. I'm
21 assuming that you know a bit about MCAS at this point in the
22 case?

23 A. I do.

24 Q. What did you do to get ready to testify today
25 about issues relating to MCAS?

1 A. I looked at the material that I could bring up. I
2 got online, Googled "MCAS," looked at it, reviewed it, got a
3 basic feel for what it is.

4 Q. Now, did you see anything about MCAS in either of
5 the accident investigation reports?

6 A. No. I don't recall that they specifically
7 mentioned MCAS, but they may have.

8 Q. I'm sorry. I was talking about -- so, for
9 example, in the Indonesian accident report, did you look at
10 the section that they had dealing with how MCAS operated in
11 that particular accident?

12 A. Yes. They had detailed reports.

13 Q. And I take it you looked at that section in the
14 Indonesian --

15 A. Yes.

16 Q. Similarly, with the Ethiopian report?

17 A. Yes.

18 Q. All right. Now, I would like to direct your
19 attention to -- again, not to repeat, but just to set the
20 stage -- "Statement of Facts," paragraph 43, which says,
21 "Based on Boeing's misleading statements, half-truths, and
22 omissions to the FAA AEG about MCAS, and in reliance on
23 those statements and omissions, the FAA AEG agreed to delete
24 all information about MCAS from the 737 MAX, FSB report."

25 Are you aware of that statement?

1 A. Yes, I am.

2 Q. Could you help explain what would then be the
3 ramifications of deleting -- what was it -- "all information
4 about MCAS from the FSB report"?

5 A. If the information pertaining to MCAS is deleted
6 or withheld or not forwarded to the AEG for evaluation, the
7 AEG is going to make certain determinations based on
8 internal documents on how they go about evaluating
9 information. And they are going to probably -- in that
10 case, they would apply incorrect standards to that
11 information and, as a result, come up with an erroneous
12 determination as to what training was needed.

13 That would then create a cascading effect where
14 the information would not be in the flight manual. The
15 information that's critical to it would not be included in
16 the checklist. It would not have been included in training.

17 Consequently, it would be a trickle down.
18 Everybody that needed -- especially the crew that needed to
19 know the information or get trained on it would not have
20 access to that information or have been trained on it.

21 Q. And this may be an obvious point, but I think to
22 be clear in the record, why would pilots want this kind of
23 information in the course of flying aircraft that hold
24 hundreds of people on it?

25 A. Well, the whole idea of training is to educate the

1 crews on all of the systems of the aircraft. Each carrier
2 will have a different philosophy on how deep they want to go
3 into the systems of the aircraft.

4 But as a pilot, they need to know about the
5 systems on their aircraft, how they work and, if they
6 malfunction, how to react properly to that malfunction.

7 Q. This sounds like it could be a life-or-death
8 issue?

9 A. Depending on the system, it could be, yes.

10 Q. Let's go to Statement of Facts, paragraph 46.
11 It's similar, but I think it's important to underscore this
12 one.

13 Paragraph 46 in the Statement of Facts says,
14 "Because of Boeing's intentional withholding of information
15 from the FAA AEG, the final version of the 737 Max FSB
16 report lacked information about MCAS. And relevant portions
17 of this 737 MAX, FSB report were materially false,
18 inaccurate, and incomplete."

19 Could you explain how the report would have been
20 "materially false, inaccurate, and incomplete"?

21 A. I would characterize it as incomplete simply
22 because they did not receive or have the appropriate
23 information concerning certain facets of information.

24 Q. All right. And a moment ago you mentioned this
25 trickle-down effect extending to flight manuals. I want to

1 build a record now a little bit about how aircraft flight
2 manuals would be operating in this context.

3 My understanding -- and you're obviously the
4 expert here, but my understanding is that over the last
5 several decades, the FAA has required aircraft manufacturers
6 to provide an approved aircraft flight manual for each
7 aircraft that's certified?

8 A. Yes.

9 Q. And it seems like the aviation folks always want
10 to use acronyms. So is there an acronym for aircraft flight
11 manual?

12 A. "AFM."

13 Q. And have you seen AFMs in the course of your 24
14 years with the FAA and your -- your other aviation
15 endeavors?

16 A. I've seen many.

17 Q. Does this requirement for a flight manual apply to
18 the Boeing 737 MAX?

19 A. It would.

20 Q. And who reviews the AFMs to make sure that they're
21 appropriate?

22 A. There's several organizations within the FAA that
23 participate in that review of the AFM because it addresses
24 many issues, and not just issues that would affect the crew
25 up in the front.

1 There are a lot of other systems and pieces of
2 equipment that they would look at. So it's kind of a team
3 effort to look at the AFM and put it together, different
4 organizations.

5 Probably within Boeing, they would have different
6 people that would add those pieces to it. And when the FAA
7 got ahold of it, they would assign certain parts of it to
8 certain specialities.

9 Q. All right. And then what -- can you just describe
10 generally what an AFM would look like? I mean, what sorts
11 of things are in a flight manual?

12 A. Basically, the AFM would describe all of the
13 systems within the given aircraft in fairly -- in very much
14 in detail.

15 Q. Now, if it's going to be in great detail, I'm
16 wondering whether the pilots might want a slimmed-down
17 version of the flight manual in certain circumstances?

18 A. They do. They came out -- operators usually
19 create a company flight manual which, because of the bulk of
20 the information and the quantity of the information, they
21 pare it down and get the essentials out and basically put
22 that in the company flight manual, and that is the
23 information that a pilot can look at and use.

24 Q. I think you referred to it as a company flight
25 manual, a CFM, the acronym that is commonly used?

1 A. Yes.

2 Q. Does the CFM have any impact on the safe operation
3 of a commercial aircraft?

4 A. Yes.

5 Q. Could you explain how it could impact the safe
6 operation of a commercial aircraft?

7 A. Once the manual is approved, the operator gets a
8 copy of it. The training people will take ahold of it, and
9 they will go through it, and they would develop and
10 formulate a training program based on the information they
11 glean from that document.

12 Also from that document, they will develop their
13 checklist. A checklist is very important. It's a federal
14 aviation requirement that they provide check- -- that the
15 operator provide a checklist and that the crew uses the
16 checklist.

17 So much of the training and the checklists and CFM
18 come out of that source document, the AFM.

19 Q. I want you to assume that, as the Statement of
20 Facts says, "Boeing provided incomplete and fraudulent
21 information to the FAA about MCAS."

22 What cascading effect would that have on the CFM?

23 A. Well, if the information was withheld and not
24 included in the CFM when the training people started to
25 review that document to develop a training program for it,

1 the training would be incomplete.

2 Also, if there was no information about the faults
3 for the MCAS system, there would not obviously be anything
4 that would be put into the checklist that would help the
5 crew to address an emergency situation or a non-normal
6 situation with that system.

7 Q. Now, you mentioned emergency situations. I'm
8 assuming these documents are all of critical importance if
9 the plane is becoming unstable or something along those
10 lines?

11 A. Yes.

12 Q. Again, that would be a life-or-death situation
13 potentially?

14 A. It could be, yes.

15 Q. You mentioned, too, that there are sometimes steps
16 that are laid out for pilots to handle emergency situations.

17 Are you familiar with something called a checklist
18 in this context?

19 A. Yes.

20 Q. So I want to turn to the subject of pilot
21 checklists on the Boeing 737 MAX. What would the checklist
22 for a 737 MAX look like?

23 A. It will vary from carrier to carrier. It will
24 cover the essentials. It will cover normal operations,
25 non-normal operations, and emergency operations. So you

1 will normally have three sections.

2 It will address the various flight regimes from
3 start to taxi, pre-takeoff, takeoff, climb, crews, descent
4 before landing, landing, taxiing, shutdown, things of that
5 nature. The more sophisticated the aircraft, the longer the
6 checklist. And the simple single-engine airplane usually
7 has one or two pages.

8 But the checklists are -- once again, they are
9 reviewed by the FAA. The principal operations inspector, he
10 will look at that, and he will approve that based on the
11 information he has gotten from those particular documents.

12 Q. I want to focus you in on an emergency situation.
13 How would a checklist promote safety in an emergency
14 situation?

15 A. It varies on the emergency. Some emergencies that
16 arise do not permit the pilot the luxury of time to pull up
17 his checklist and look at it.

18 There are those emergencies where they have memory
19 items that they have to act immediately in order to maintain
20 safe flight.

21 They go through training. They go through a
22 ground school. And then they get into a simulator usually,
23 they go through those memory items. Once they've completed
24 the memory items, then they can pull up the checklist and go
25 through the emergency checklist.

1 And that will, number one, ensure that the memory
2 items were all addressed. And then it usually goes on for
3 some clean-up items that aren't that critical. You shut
4 this engine down or you started that -- or charged that fire
5 bottle or something.

6 Then there are certain other steps that go on that
7 are not as critical to safe flight, but are kind of what we
8 call clean-up items, and they would use a checklist on that.

9 Q. Let me focus you in to an emergency that might be
10 caused from what I will call, uncommanded MCAS activation.

11 Was the Boeing 737 MAX, at the time of the
12 Indonesia crash, provided with a checklist to tell the
13 pilots what to do in such a situation?

14 A. They had a checklist for uncommanded pitch trims.

15 Q. What about uncommanded MCAS activation?

16 A. I did not recall seeing anything of that nature.

17 Q. And, in fact, because Boeing had provided
18 incomplete and inaccurate information to the FAA, would it
19 be fair to say that that would be one of the areas where the
20 cascading effect you talked about would be in play?

21 A. Yes.

22 Q. I want to direct your attention now to Statement
23 of Facts, paragraph 46. There's the second sentence in that
24 agreed Statement of Facts, which again I'll just read for
25 purposes of setting the stage here.

1 "In turn, airplane manuals and pilot training
2 materials for U.S.-based airlines lack the information about
3 MCAS. And the relevant portion of these manuals and
4 materials were similarly materially false, inaccurate, and
5 incomplete as a result."

6 Are you familiar with that Statement of Facts?

7 A. I am.

8 Q. And is your opinion consistent with that Statement
9 of Facts?

10 A. It is.

11 Q. It mentions -- they stuck the words in "U.S.-based
12 airlines" in that Statement of Facts. I am wondering about
13 that.

14 Wouldn't it be fair to say that, generally
15 speaking, the same would be true for foreign-based aircraft?

16 A. Yes.

17 Q. And why would that be the case?

18 A. They're operating a U.S.-manufactured aircraft,
19 and basically the information about the systems, what
20 training would be required, would be applicable to that
21 aircraft regardless of what the country of registry would
22 be.

23 Q. All right. I want to turn now to -- and we'll
24 have some more information about the two crashes in a
25 moment, but let's talk generally about your next opinion.

1 Your next opinion is, "Had the Boeing 737 FSB been
2 provided with a complete dataset with regards to the MCAS
3 for the 737 MAX, they would have determined that the changes
4 warranted a higher level of differences training involving
5 simulators."

6 You're obviously familiar with your opinion on
7 that.

8 A. Yes.

9 Q. Let me just ask you, in the course of your flying
10 career, your FAA duties, your subsequent consulting, ever
11 been exposed to issues surrounding flight simulators?

12 A. I have.

13 Q. Have you ever been in a flight simulator?

14 A. I have.

15 Q. Why don't you tell us a little bit about -- let's
16 unpack your experience with flight simulators.

17 What sort of the experience have you had with
18 flight simulators?

19 A. I have trained as a pilot on numerous flight
20 simulators. I worked with the -- I was one of the
21 certification people for Semiflight over here in Dallas, and
22 they were the first training center to be certificated under
23 FAR Part 142.

24 Q. I'm sorry. You're going to have to unpack that
25 for me a little bit. So they were certificated. Why don't

1 you explain exactly what that means.

2 A. At that point, the FAA determined with all of
3 these simulators that were around the country, they needed
4 to have kind of a standard for training, and they came up
5 with the FAR 142 training centers.

6 We spent two years working with them to get them
7 certificated as a 142 training center, flight safety. Many
8 of other training centers, people that have simulators, are
9 all under 142.

10 And as part of the certification, we had to -- I
11 looked at a lot of the training, particularly for the Hawker
12 aircraft, sat through all the ground schools, and then I
13 went through and had to observe the simulator training to
14 ensure that the simulator training was adequate and it met
15 the standards and the objectives and completion standards
16 for the training programs.

17 We also had to look at the simulator and
18 coordinate with the National Simulator Team on the use of
19 the simulator, especially with the Hawker.

20 The Hawker was a unique simulator in that it could
21 be converted from an 800 to a 1,000, which are two different
22 type ratings. And we had to work with the Semiflight to get
23 them to develop a checklist for the conversion from the 800
24 to the 1,000.

25 It started out at about eight or 10 hours. They

1 got it down to about a four-hour process. We had to go in
2 and check the simulator, some basic functions, after each
3 conversion. I was involved with that for the Hawker.

4 Q. Yeah, you mentioned you were involved in that. I
5 just want to -- so the record is clear, you said, "We had to
6 do this. We had to do that." Were you personally involved
7 in these certification projects?

8 A. I was.

9 Q. And did you get a good understanding of aircraft
10 simulators as a result of your involvement in the
11 certification process?

12 A. I got a good introduction to it.

13 Q. I think also, in the course of your career, you
14 were an aviation safety inspector, is my understanding?

15 A. Yes, sir.

16 Q. Did that involve any interactions with flight
17 simulators?

18 A. Yes, it did.

19 Q. Could you tell me a little bit about what you did
20 there?

21 A. As aviation safety inspector, I was a national
22 resource for King Airs and for Hawkers. I went out and,
23 either in an airplane or a simulator, I would administer the
24 appropriate practical test for an airman to get a type
25 rating or an additional rating or get currency in a

1 particular -- in 135, which is air taxi, if you will. And a
2 lot of those were done in the simulator.

3 Q. You mentioned you were a national resource. That
4 was -- again, that was part of your duties at the United
5 States government's FAA?

6 A. Yes. As an FAA inspector, I was designated as a
7 national resource.

8 Q. Now, you mentioned this Hawker aircraft.
9 Obviously, today's case involves a 737 MAX. Are any of the
10 principles that you've been describing involving flight
11 simulators in other cities and other planes applicable to
12 the Boeing 737 MAX?

13 A. Yes.

14 Q. Could you describe briefly the similarities and
15 processes that you see there?

16 A. Basically, the approval process for training
17 programs for the use of simulators, pretty much standard
18 across, depending -- irregardless of what make and model
19 aircraft it is.

20 The simulators have to meet certain minimum
21 standards. And they have to have certain functions
22 available to them so that they can adequately replicate
23 certain situations for the pilot to react to as part of the
24 testing and training programs.

25 Q. Have you ever been inside a 737 simulator?

1 A. Yes, I have.

2 Q. Your opinions you're offering today, you believe,
3 rest on this body of work that you've been describing here
4 briefly?

5 A. Yes.

6 Q. The kinds of things that you have been describing,
7 are those the kinds of things that experts who would want to
8 offer opinions about appropriate levels of training would
9 rely upon?

10 A. I believe so, yes.

11 Q. Well, let's now dive into some more specifics
12 about training for the 737 MAX. I think you were telling us
13 a little bit earlier about something called master
14 difference requirements.

15 Could you explain for the Court how, when a new
16 version of the 737, like the 737 MAX, comes online,
17 differences between that aircraft and earlier aircraft would
18 be assessed?

19 A. The FAA would work with the manufacturer to
20 determine what new -- or what differences exist between the
21 old, or the previous variation, and the new variation.

22 They would analyze those differences and make a
23 determination as to what type or what level of training
24 would be required to provide pilots with sufficient
25 information for them to satisfactorily operate the new

1 variation.

2 The purpose of that was so the pilot that has
3 never flown a 737 would get trained, and he would get a type
4 rating on his certificate saying he can fly the 737.

5 The training with the variants, differences
6 training, allows the operator to provide differences
7 training to the pilots, or the crew members, test them on
8 it, and find them proficient.

9 And that way, just doing the training on the
10 variations, or on the differences, reduces or eliminates the
11 necessity for them to have to go back and get type rated on
12 a whole new airplane, which is -- you know, they're familiar
13 with, could be 90 percent of it, 95 percent of it,
14 75 percent. That's what the variation does. That's usually
15 the differences. They will train you on that.

16 Q. I don't want to repeat all the information that's
17 in the Statement of Facts on this, and I know that the Court
18 is very familiar with these different levels going from A to
19 E., have you heard about those as well?

20 A. I'm familiar with them.

21 Q. And just to sort of jump right to it, as relevant
22 here, Level B is generally going to be regarded as, I think
23 it's referred to as computer-based training or something
24 similar to that?

25 A. I believe in the definition it talks about, it can

1 be direct training with a direction.

2 Q. And then Level D, as I understand it, is a more
3 rigorous level of training?

4 A. It is.

5 Q. And what is Level D training?

6 A. Level D training would involve placing the crew
7 members in a simulator and going through specifically those
8 variations and allowing them the opportunity to see, feel,
9 touch, hear, what those are and gives them a chance to train
10 to proficiency on that.

11 Q. You mentioned a moment ago that a simulator you
12 were working on took two years to get approved. I take it
13 the number of simulators for something like the 737 MAX is
14 pretty limited?

15 A. What I said was that it took two years to get the
16 142 certificate. There was a lot involved with it, with not
17 just the simulators, but there was course material, course
18 instruction, the structure of the organization, and how they
19 controlled quality control.

20 Part of the reason that it took so long was that
21 we -- the FAA came out with a regulation, but it lagged
22 behind the guidance in the 8900.1 handbook, the guidance for
23 inspectors, and also with the -- lacked the advisory
24 circular that usually goes out, which is a document that the
25 operators can look at and use that for guidance on how to

1 proceed to get an approval of something like that.

2 So, it was new to the FAA. It was new to the
3 operator. And that's why it took two years. Simulators
4 were there --

5 Q. Let me just -- maybe I can focus on what I think
6 is critical here.

7 Is it fair to say Level D training is going to be
8 more expensive for --

9 A. Yes.

10 Q. And just briefly, why? Why is that the case?

11 A. Well, you have the operation of the simulator, and
12 cost of the simulator is in the millions of dollars,
13 obviously. The people necessary are trained properly to use
14 that simulator.

15 And that would obviously add tremendously to the
16 cost versus sitting down in a classroom with a computer or
17 little small booklet in front of you and an instructor up in
18 front for half an hour or an hour.

19 Q. I want to direct your attention now to a
20 particular paragraph in the Statement of Facts. That's
21 paragraph 19.

22 It refers to an email sent by Boeing employee Mark
23 Fortner, in which he states, "If we lose Level B, it will be
24 thrown squarely on my shoulders. It was Fortner. Yes,
25 Fortner, who cost Boeing tens of millions of dollars."

1 Are you familiar with that paragraph?

2 A. Yes.

3 Q. Is that consistent or inconsistent with the
4 opinion you've just offered there?

5 A. That would be consistent.

6 Q. And he's talking about millions of dollars. I
7 know you didn't look at an exact totaling up of the amounts,
8 but does that seem like a -- I guess it's Boeing's own
9 employee -- does that seem like a reasonable calculation to
10 you?

11 A. I would say so, yes.

12 Q. Now, before the two crashes that are of interest
13 in this case, what level of training did the FAA AEG
14 indicate was appropriate for the pilot transitioning to the
15 Boeing 737 MAX?

16 A. According to the documents that I reviewed, they
17 recommended and put into the FSB, Level B training.

18 Q. Now, that would apply, as I understand it, to the
19 U.S.-based airlines?

20 A. It would.

21 Q. The FAA does not have formal jurisdiction over
22 foreign airlines; is that correct?

23 A. Yes.

24 Q. But if we look beyond the black letter law to
25 real-world practical effects, would an FAA determination on

1 these kinds of training issues ever have an effect on
2 foreign-based carriers?

3 A. Yes.

4 Q. What kind of effects would it have?

5 A. I would say the same kind of effect that it would
6 have on a U.S.-based carrier. They would look to that
7 information, take that, incorporate it into their own
8 training. They would certainly look at it as a safety issue
9 and would want to make sure that they operated at the
10 highest level of safety.

11 Q. And again, because we can proudly say as Americans
12 that the FAA has a lot of authority in these areas, is that
13 one of the reasons why the recommendations from the FAA are
14 often given credence in other countries?

15 A. Yes.

16 Q. I take it part of the reason they're given
17 credence in other countries is, in general, other countries
18 are expecting American manufacturers of aircraft to be
19 truthful and honest in the information they provide to the
20 FAA?

21 A. Yes.

22 Q. All right. Well, we've been talking generally
23 about these issues. I now want to focus in on a particular
24 date. October 29th, 2018.

25 MR. CASSELL: With the Court's permission, I would

1 like to approach the witness briefly, and I will provide a
2 courtesy copy for the Court as well, and we'll provide
3 copies to counsel as well.

4 BY MR. CASSELL

5 Q. Let me set the stage briefly. I think it's
6 undisputed that in Statement of Facts paragraph 28, "On
7 October 29th, 2018, Lion Air, Flight 610, a Boeing 737 MAX,
8 crashed shortly after takeoff into the Java Sea near
9 Indonesia. All 189 passengers and crew on board died."

10 I take it you are familiar with that crash?

11 A. Yes.

12 Q. Now, this was an Indonesian airline that had a
13 plane taking off from Jakarta, crashing into the Java Sea
14 near Indonesia. I'm assuming once a crash like that occurs,
15 there's international interest in what happened?

16 A. Yes.

17 Q. Why would there be interest in figuring out what
18 happened?

19 A. Well, many other countries operate the same type,
20 make, and model of aircraft, in this case, the 737 MAX, and
21 they would be most interested in finding out what happened
22 so that they could perhaps take the appropriate steps to
23 prevent that from happening to them.

24 Q. Then earlier we were talking about this
25 organization known as ICAO. Does ICAO have anything to say

1 about accident investigations and who is in charge of those
2 investigations?

3 A. The ICAO is -- kind of sets the recommended
4 standard for the world -- aviation world to follow.

5 Q. And I'm sorry, so is there an annex dealing
6 specifically with --

7 A. Annex 13.

8 Q. And so, for a crash of the type that I've just
9 described, who would be responsible for doing that
10 investigation?

11 A. Primarily, it would be the CAA of Indonesia.

12 Q. All right. Now, I want you to take a look at
13 what's been marked for identification as Families'
14 Exhibit 2.

15 It says, let's see at the outset here, if I'm
16 pronouncing this correctly, Komite Nasional Keselamatan.
17 Transportasi Republic of Indonesia.

18 Do you understand who is generally preparing their
19 report?

20 A. Yes. It would be -- the information there, it
21 would be the KNKT, I believe is what they call it.

22 Q. So I think for convenience, then, I will refer to
23 them as "KNKT." Is that a convenient shorthand?

24 A. Yes, I believe so.

25 Q. And if we flip to the inside front cover of this

1 KNKT report, I see a signature from someone who's the
2 chairman of this KNKT, I guess, it is?

3 A. Yes.

4 Q. And if I can direct your attention up towards the
5 top of the page, there's -- the second paragraph says, "This
6 report is based upon an investigation carried out by the
7 KNKT in accordance with Annex 13 to the convention."

8 Is that the Annex 13 that you've been referring
9 to?

10 A. It is.

11 Q. All right. So now that we know who prepared this
12 report -- the report seems to be pretty lengthy here. Let's
13 see, 317, 319 pages, I believe -- without going through
14 every page, can you tell us what kind of information is
15 generally in this report?

16 A. Again, it would have, as indicated there with the
17 table of contents: The history of the flight, the injuries
18 to the persons, damage to the aircraft, personnel
19 information for each one of the crew members. They would go
20 into their training background, their currency, medicals,
21 experience on that particular make and model, flight time
22 within the last year, last six months, 90 days.

23 They would look at the aircraft. They would go
24 back into the records and look at the maintenance records,
25 what has been done to that aircraft. Are all of the

1 required maintenance items done, done in the proper manner,
2 and in a proper sequence, and in a timely manner?

3 They would look at any "squawks," if you will,
4 where pilots would write up that something broke, something
5 was faulty, something didn't work. They would look at those
6 to see if they had been addressed. They would look at all
7 the different systems on the aircraft. To the extent that
8 they can, these investigators just about rebuild airplanes.

9 They are able to get it in a large hangar and
10 start laying out the pieces. And they can do a phenomenal
11 job of looking at individual pieces and tell what -- what
12 piece broke, why it broke. They look at the weather
13 information, aero communications, medical, and pathology.

14 As a matter of course, in the United States, any
15 fatalities involving a crew member, the FAA would direct a
16 -- we had what we call the tox kit. And they would do an
17 autopsy and determine the presence of alcohol or any illicit
18 drugs, or any kind of drugs, including over-the-counter,
19 that might have been in the system of the crew members.

20 And then they also look at survivability. Excuse
21 me. They will look at the organizational -- excuse me.
22 They will look at the organizational structure of the
23 organization, the owner of that company, or that type of
24 aircraft involved in the accident, to determine if they had
25 effective management, they had effective risk programs in

1 place, and if they were executed.

2 So it's usually a very in-depth type of look at
3 it. They also come up with -- at the end, they usually put
4 their analysis and safety recommendations that come out of
5 the accident report.

6 Q. I think you said earlier that, in the course of
7 your duties at the FAA, you had seen hundreds of accident
8 reports coming across your desk in one way or another?

9 A. Yes.

10 Q. Does this accident report we're looking at here
11 resemble and follow the kinds of protocols and methodologies
12 that you have seen in those other reports?

13 A. Yes. The format and the methodology is pretty
14 much the same whether it's a small, single-engine airplane
15 or, say, a large transport category aircraft.

16 Q. Did the information inside this report appear
17 trustworthy to you?

18 A. I believe it would be, yes.

19 MR. CASSELL: Your Honor, at this time, I would
20 offer into evidence Families' Exhibit 2.

21 THE COURT: It will be admitted.

22 (Exhibit 2 was admitted into evidence.)

23 MR. JACOBS: I'm going to object to that, your
24 Honor. Just for the record, objection to hearsay.

25 MR. CASSELL: All right, your Honor --

1 MR. HANEY: We join the objection, your Honor.

2 MR. CASSELL: I would like to build a brief record
3 to explain why the hearsay objection is inadequate, or I
4 guess maybe I shouldn't do that, because I could do it later
5 on.

6 THE COURT: Just go ahead and ask your next
7 question.

8 MR. CASSELL: All right. I would note for the
9 record, if I could for just one sentence, the government
10 cited this very document in its earlier briefing.

11 BY MR. CASSELL:

12 Q. All right. Let's turn in for the report, then. I
13 think you said you relied on this report in preparing your
14 opinions?

15 A. I did.

16 Q. I'm going to identify a couple of particular
17 findings in the report, and then I'm going to ask you if you
18 relied on it and whether they were significant.

19 "The KNKT found that the flight manual for the
20 Boeing 737 MAX aircraft that crashed did not include
21 information about MCAS."

22 Did you rely on that fact in reaching your
23 opinions?

24 A. I read that, and I took that into consideration.

25 Q. What significance did you attach to that fact?

1 A. I considered that a very significant factor. In
2 that a major piece of information was missing, and,
3 therefore, not available to the crew.

4 Q. "KNKT found that the flight crew training for Lion
5 Air, Flight 610, did not include information about MCAS."

6 Did you rely on that finding in reaching your
7 opinions?

8 A. I did.

9 Q. What significance did you attach to that fact?

10 A. Once again, the crew of the aircraft would be
11 flying without complete information and knowledge about the
12 aircraft in which they were flying.

13 Q. "KNKT found that no information about MCAS was
14 given in the flight crew manuals for the Lion Air flight.
15 And KNKT found that there were no procedures for mitigation
16 in response to erroneous MCAS activation."

17 Did you rely on that fact in reaching your
18 opinions?

19 A. Yes.

20 Q. And again, what significance was there to that
21 particular fact?

22 A. Once again, the final analysis, the crew was not
23 completely trained, did not know of the system's -- complete
24 knowledge of the systems on their aircraft and had to review
25 to -- or correction -- how to respond to an emergency or an

1 abnormal situation regarding that system.

2 Q. "KNKT also found that not including information
3 about MCAS in the flight crew operation manual made it more
4 difficult for the flight crew to diagnose problems and find
5 the corrective actions to overcome the improper MCAS
6 activation that occurred before the crash."

7 Did you rely on that finding in reaching your
8 conclusion?

9 A. Yes.

10 Q. And what significance did you attach to that?

11 A. I would say that, the same thing. The pilots
12 would be -- have incomplete training and not have full
13 knowledge of the systems on their aircraft.

14 Q. Just a couple more here, and then I will move on
15 to the next subject.

16 "KNKT found that flight crew training would have
17 supported the recognition of abnormal situations and
18 appropriate flight crew action, but Boeing did not provide
19 information and additional training requirements for the 737
20 MAX since the plane was considered similar to previous
21 models."

22 Were you familiar with that fact?

23 A. I was.

24 Q. And what significance did you attach to that?

25 A. It would be the same.

1 Q. And now, just two last ones that are found. I
2 think you said at the end sometimes these reports have kind
3 of overall conclusions.

4 And in the overall conclusion section of this
5 report, at page 207, KNKT found, "Without understanding of
6 MCAS and reactivation after release of the electric trim,
7 the flight crew was running out of time to find a solution
8 before the repetitive MCAS activations, without fully
9 retrimming the aircraft, placed the aircraft into an extreme
10 nose-down attitude that the flight crew was unable to
11 recover."

12 Were you aware of that fact as well?

13 A. I read that, yes.

14 Q. And what significance did you attach to that
15 conclusion?

16 A. Going back to the lack of training. They had not
17 been exposed to that situation. Therefore, they were kind
18 of flying with that situation with one hand tied behind
19 their back.

20 Q. One last conclusion, "KNKT found" -- at page
21 207 -- "The investigation believes that the flight crew
22 should have been made aware of MCAS, which would have
23 provided them with awareness of the system and increase
24 their chances of being able to mitigate the consequences of
25 multiple activations in the accident scenario."

1 Were you familiar with that conclusion?

2 A. Yes.

3 Q. And what significance did you attach to that?

4 A. Once again, the lack of information to the crew
5 members prevented them from being able to react in a -- an
6 appropriate manner to overcome the situation and stabilize
7 the aircraft.

8 Q. And just to be clear, the situation led to the
9 death of 189 people?

10 A. Yes.

11 Q. Let me talk a little bit now about differences
12 training against that backdrop of that particular aircraft
13 and that particular flight. I want to talk about how Level
14 D versus Level B would have interacted with the events
15 there.

16 On October 29th, 2018, when 189 people died, what
17 level of training was the FAA recommending for that
18 aircraft?

19 A. At that time, it was Level B.

20 Q. And was that Level B recommendation based on
21 complete information from Boeing or incomplete information?

22 A. It was not based on complete information.

23 Q. At that time, those pilots were not given
24 simulator training on how to deal with improper MCAS
25 activation. Is that fair?

1 A. Yes, that's correct.

2 Q. Is it fair to say that, because Boeing made a
3 conscious effort to deceive the FSB by withholding critical
4 information regarding MCAS on the 737 MAX, the FSB,
5 following applicable guidelines, came to the logical
6 conclusion that Level B differences training was
7 appropriate?

8 A. Yes, sir.

9 Q. "Once it was discovered that Boeing had
10 intentionally and fraudulently omitted critical data
11 regarding the 737 MAX, MCAS system, the FSB later
12 reevaluated the data."

13 And do you know what that later reevaluation
14 concluded?

15 A. They came up with a reevaluation of Level D.

16 Q. Why would the FAA want to have Level D training to
17 deal with these kinds of situations?

18 A. Basically, when they had all of the information
19 made available to them following their own internal guidance
20 and evaluations, they made the determination that a Level D
21 would be the appropriate level of differences training.

22 MR. CASSELL: Now, I think your Honor is aware
23 that in a couple of weeks we're going to have Vickie Norton,
24 a pilot, who's actually gone through some of these
25 trainings.

1 BY MR. CASSELL:

2 Q. But I want to ask you, you've also been through
3 flight simulator training --

4 A. Yes, sir.

5 Q. -- not on the 737 MAX?

6 But based on these other simulators you've gone
7 through, what advantages would simulator trainings -- the
8 simulator training have given to those pilots on that
9 flight?

10 A. Simulator training is just kind of like what it
11 says. It simulates a real-life situation. The simulator
12 duplicates what the aircraft is capable of doing. The
13 simulator or the operator of the simulator has the
14 capability to introduce different faults, different
15 scenarios to the crew, where there are different reactions
16 that are required.

17 It gives the pilots the opportunity to take
18 information and knowledge that they have gained in the
19 classroom and now take it and put it and apply it into the
20 cockpit.

21 If there are memory items to be done, it gives
22 them the opportunity to execute those memory items. And if
23 something is wrong, they have the opportunity to freeze the
24 simulator, stop it in mid-motion, and to discuss what was
25 wrong.

1 The simulator gives the pilot or the crew members
2 the opportunity to, not only hear what is being taught or
3 what he needs to know, but he has a chance to see it. He
4 can see it on the gauges. He can see it on trim wheels. He
5 can see it on message boards, on lights.

6 He can feel it. He can feel what kind of control
7 services he has. He can feel which way the aircraft is
8 going and how to react to that. He can get a certain
9 visceral sense of what's happening without being in a
10 real-life, dangerous situation.

11 So it gives him several opportunities, through
12 several senses, to reinforce the learning so that, when he
13 goes out and starts flying the line, he has that knowledge
14 that, if that situation comes up, the training on how to
15 properly react to that particular emergency is pretty
16 well-ingrained in him and he knows what to expect, and he's
17 not sitting there in a quandary wondering, what do I do
18 next? Or trying to figure out from scratch, well, what do I
19 do? There's something in writing that he learned and he
20 actually experienced.

21 Q. All right.

22 MR. CASSELL: And again, your Honor, we'll hear a
23 lot more about this in a couple of weeks when Vickie Norton
24 comes in.

25 ///

1 BY MR. CASSELL:

2 Q. We've now covered the Indonesia crash. I'm going
3 to jump over to the Ethiopian crash.

4 But just briefly, during that four-month period, I
5 understand that there was something called an FCOM, a Flight
6 Crew Operations Manual on -- when was that? November 6.
7 And on November 10, there was a, I think, a MOM, a
8 multi-operator message, touching briefly on some MCAS
9 issues.

10 I take it you are aware of those two documents?

11 A. I am.

12 Q. Did you see those two documents as significantly
13 changing the safety landscape from the Indonesian crash to
14 the Ethiopian?

15 A. No, I did not.

16 Q. All right. If the parties have other questions, I
17 suppose we will hear about that later.

18 Let's go to the Ethiopian Airline crash. With the
19 Court's permission, I would like to approach the witness
20 briefly to provide Families' Exhibit 3.

21 BY MR. CASSELL:

22 Q. And to set the stage for this report, according to
23 the Statement of Facts, "On March 10th, 2019, Ethiopian
24 Airlines, Flight 302, a Boeing 737 MAX crashed six minutes
25 after takeoff near Nahari, Ethiopia. All 157 passengers and

1 crew were killed."

2 I take it you are familiar with that Ethiopian
3 crash?

4 A. I am.

5 Q. The Statement of Facts is pretty vague on this
6 topic. The Statement of Facts said that, "The FAA learned
7 that MCAS activated during the flight and may have played a
8 role in the crash."

9 Were you able to get more information about the
10 role that MCAS played in the Ethiopian crash?

11 A. A little bit. But, again, that's not my
12 bailiwick, the machinations of MCAS.

13 Q. Right. But I take it you looked at this
14 particular report that you have in front of you there?

15 A. Yes, I did.

16 Q. And just, I guess, since there may be a similar
17 objection, this report was prepared by the Federal
18 Democratic Republic of Ethiopia Ministry of Transport
19 Aircraft Accident Investigation Bureau, Interim Report.

20 Is that the same kind of authority as the KNKT
21 that we were talking about?

22 A. I believe it is, yes.

23 Q. And why was it that the Ethiopian authorities were
24 investigating this crash of an Ethiopian airline?

25 A. Well, they had jurisdiction. It was one of their

1 nationally registered aircraft and company within their
2 jurisdiction.

3 Q. So, like the Indonesian crash, the ICAO annex we
4 were talking about was -- provided that legal authority for
5 them to --

6 A. They used the framework for that.

7 Q. And was this report, again, without going through
8 all the details, was it similar to the lengthy report we
9 were just looking at for the Indonesian crash?

10 A. Yes.

11 Q. In your estimation, was it similarly trustworthy?

12 A. I believe so, yes.

13 Q. And would an expert trying to offer the kinds of
14 opinions you're offering rely on a report of this type?

15 A. Yes.

16 MR. CASSELL: Your Honor, at this time, I would
17 offer Families' Exhibit 3.

18 MR. JACOBS: Objection, hearsay.

19 MR. HANEY: Join the objection.

20 THE COURT: Overruled. It will be admitted.

21 (Exhibit 3 was admitted into evidence.)

22 BY MR. CASSELL:

23 Q. All right. Now, again, as I did with the
24 Indonsian report, I'm going to highlight a couple of facts
25 and then ask you whether you relied on that and whether they

1 were significant.

2 The first fact is found on page 131 of the report.

3 The Ethiopian AAIB -- and again, that's -- what is it? The

4 Accident Investigation Bureau, I think -- found that,

5 "Shortly After ET-302 takeoff, multiple automatic nose-down

6 trim MCAS were activated."

7 Were you aware of that finding?

8 Or did you rely on that finding, I guess I should

9 say?

10 A. I have reviewed that, yes.

11 Q. And what significance did you attach to that

12 particular fact in the context of the opinions you're

13 offering today?

14 A. Once again, I think that they were very slim on

15 training.

16 Q. Well, indeed.

17 Going right on to the next page of the report,

18 page 132. "The Ethiopia AAIB found that the difference

19 training from the Boeing 737 NG" -- which, as I understand,

20 was the predecessor version -- "to the 737 MAX provided by

21 Boeing was inadequate."

22 Did you rely on that finding in reaching your

23 conclusions?

24 A. I had looked at that, yes.

25 Q. And what significance did you attach to the fact

1 that the Ethiopian authorities thought the training was
2 inadequate?

3 A. At that point, then, it goes back to the
4 fundamental problem there that -- that I saw was the lack of
5 training that the crews received.

6 Q. And I think earlier today you were talking about
7 simulator training. At page 132, if I understand things
8 correctly, the Ethiopian AAIB recommended that the
9 difference training for pilots transitioning to the 737 MAX
10 should include simulator sessions to familiarize them with
11 normal and non-normal MCAS operation.

12 Did you rely on that fact in reaching your
13 conclusions?

14 A. Yes, I read that.

15 Q. And what significance did you attach to that fact?

16 A. It told me that they realized that the information
17 that they had relied on for differences training did not
18 really support the fact, and that the best way to get crews
19 trained from that point on would be to put them into a
20 simulator situation where they could better learn and
21 understand that system.

22 Q. And, in fact, on that same page, the Ethiopian
23 AAIB recommended that the training simulators needed to be
24 capable of simulating AOA failure scenarios.

25 Did you rely on that fact?

1 A. Yes.

2 Q. Just so the record is clear, AOA, that's a angle
3 of attack sensor that, I think, the Court is very familiar
4 with?

5 A. Yes. Yes.

6 Q. Just so the record is clear, but they recommended
7 training on a failure scenario?

8 Could you help us understand what that kind of
9 training would look like and why it might be important to
10 pilots dealing with AOA failure scenarios?

11 A. Basically, you have a -- on a more sophisticated
12 aircraft, they have the AOA. It will give them an
13 indication of the angle of attack of the aircraft, which is
14 the difference between the chord line and the relative wind.

15 And in very simple terms, the higher the angle of
16 attack, the closer you get to getting to an aerodynamic
17 stall. Very important for any aircraft to know what that
18 stall situation looks like, what it feels like.

19 So if it was getting false information, it would
20 be very difficult for the crew to make a determination of
21 exactly where they are. There are other instruments that
22 they could rely on. Normally, it's one of those situations
23 where, if they've had the appropriate training, they know
24 what to do. If they have a fault on the AOA, they know what
25 system to use, what instrument to use, what screen to look

1 at for backup information to get more reliable information
2 and discount the AOA.

3 MR. CASSELL: All right. At this time, your
4 Honor, I would like to briefly approach the witness and
5 offer another report. This is the House report. With the
6 Court's permission?

7 Which has been marked for identification -- this
8 has been marked for identification as Families' Exhibit 4
9 which -- let's see here. I think the cover page indicates
10 that is the final committee report on the design,
11 development, and certification of the Boeing 737 MAX coming
12 from the Committee on Transportation and Infrastructure.

13 Again, I don't know if there's going to be an
14 objection to this, but maybe I should set the stage here in
15 case there is.

16 BY MR. CASSELL:

17 Q. I notice that on page 3 of this report there's the
18 statement, "This report concludes the U.S. House Committee
19 on Transportation and Infrastructure's 18-month long
20 investigation of the design, development, and certification
21 of the 737 MAX aircraft and related matters."

22 Is that your understanding of what's in this
23 document here?

24 A. Yeah.

25 ///

1 Q. And is this the kind of document that an expert
2 like you, trying to provide expert opinions of the type
3 you're offering, would ordinarily rely upon in reaching
4 those expert opinions?

5 A. Yes.

6 Q. In fact, if we go to page 6 of the report, I see
7 there -- I think it's in the second paragraph on page 6 it
8 says the committee held five hearings on issues related to
9 the 736 MAX program, has written 23 oversight letters,
10 including 12 records request letters, received an estimated
11 600,000 pages of letters from Boeing, the FAA, airlines, and
12 others, and conducted two dozen official interviews with
13 current Boeing and FAA employees and others.

14 Do you see that there as well?

15 A. Uh-huh.

16 Q. Is that generally consistent with your
17 understanding of the type of information that's found in
18 this House report?

19 A. Yeah.

20 MR. CASSELL: Your Honor, at this time I would
21 move for the admission of Families' Exhibit 4.

22 MR. JACOBS: Objection, hearsay.

23 MR. HANEY: Join the objection, your Honor. This
24 document contains multiple levels of hearsay and, of course,
25 an expert can rely on permissible hearsay in formulating his

1 opinion, but that doesn't necessarily make it admissible
2 under the rules.

3 THE COURT: Overruled. Exhibit 4 will be
4 admitted.

5 (Exhibit 4 was admitted into evidence.)

6 MR. CASSELL: Again, I know that we're taking a
7 long time here, but I appreciate the Court's patience on all
8 of these points we think are going to our argument here.

9 BY MR. CASSELL:

10 Q. So I'm going to do the same thing I've done on
11 these other reports. I'm going to ask you, were you
12 familiar with -- or did you rely on a finding here, and then
13 what significance did you attach to it?

14 So I notice in page 25 of this report, the
15 following: "From 2015 to 2018, information regarding the
16 fact that Boeing's own test pilot took more than 10 seconds
17 to respond to uncommanded MCAS activation in a flight
18 simulator leading to potentially catastrophic consequences
19 was included in at least six separate internal Boeing
20 coordination sheets on MCAS's requirements. This indicates
21 Boeing's keen awareness of the importance of this
22 information."

23 Were you aware that the House committee reached
24 this conclusion?

25 A. I was.

1 Q. And did you find this to be a significant fact in
2 connection with some of your --

3 A. I do.

4 Q. Why would it have been significant that -- well,
5 actually, I'm sorry. Let's just move on to the next one.

6 At page 142, just to kind of -- this is a summary
7 of obviously dozens of pages in the report, "In the end,
8 MCAS played a key role in both MAX crashes."

9 Did you rely on that finding?

10 A. I read it, yes.

11 Q. And how was that significant in your opinions?

12 A. Once again, it supported my feeling and conclusion
13 that the training was inadequate for the 737 MAX with regard
14 to MCAS.

15 Q. Let's jump back one page earlier, page 141. The
16 House committee found, "The assumption that pilots
17 transitioning from the 737 NG to the 737 MAX would only need
18 a limited amount of differences training and no simulator
19 training diminished safety."

20 Were you aware of that finding?

21 A. Yes.

22 Q. And how did that factor into your analysis today?

23 A. Once again, with the lack of training, a pilot of
24 the aircraft would not be properly equipped to deal with a
25 specific emergency.

1 In this case, malfunction of the MCAS system and
2 would not know how to react. And in reality, would probably
3 have a moment or two where they would look at it and not
4 know how to respond because they hadn't been taught how to
5 respond and precious seconds might have gone by while they
6 tried to figure out what to do.

7 Q. A couple of points today. You've mentioned the
8 cascading effect of Boeing's lies. I noticed that on page
9 141 is the following, "More than any other program
10 objective, ensuring that the FAA's pilot training
11 requirements for the MAX did not include simulator training,
12 had an incredibly significant cascading effect on the 737
13 MAX program that undermined the safety of the flying
14 public."

15 Were you aware of that finding?

16 A. Yes.

17 Q. And, again, how is that significant in the context
18 of your opinions?

19 A. It's the same issue there, that the pilots are
20 flying an aircraft that they're not thoroughly trained on,
21 and the fact that people get onto that airplane, the flying
22 public, they're getting into a situation where there's a
23 higher risk they're not aware of because a pilot has not
24 been properly trained or thoroughly trained.

25 Q. Another finding that I thought was significant is

1 found on page 26. The committee report says, "In
2 March 2017, the month the 737 MAX was certified by the FAA,
3 Boeing's 737 chief technical pilot responded to colleagues
4 about the prospects of 737 MAX simulator training, writing,
5 'Boeing will not allow that to happen. We will go
6 face-to-face with any regulator who tries to make that a
7 requirement.'"

8 Were you aware of that finding?

9 A. I was aware of that.

10 Q. How does that factor into the opinions that you're
11 reaching here today?

12 A. I find it rather disturbing.

13 Q. Let's go to the next one on 26 to 27. House
14 finding here is, "In May and June 2017, as some foreign
15 carriers ask Boeing about providing simulator training for
16 their pilots transitioning to the 737 MAX from the NG,
17 emails show Boeing's chief technical pilot strongly opposed
18 such training, and in one case even successfully talked a
19 carrier" -- I think in context, that's a foreign carrier --
20 "out of using such training for its pilots on the 737 MAX."

21 Were you aware of that finding?

22 A. I was.

23 Q. And does that support or undercut your
24 conclusions?

25 A. It supports my conclusions.

1 Q. The next one of interest is at page 156. It talks
2 about an airline that is involved directly in this case.

3 In a June 2017, Instant Message exchange with a
4 Boeing colleague, Fortner wrote, "Now, freaking Lion Air
5 might need a sim to fly the MAX and maybe because of their
6 own stupidity. I'm scrambling to figure out how to unscrew
7 this now."

8 Are you aware of that finding?

9 A. I am, yes.

10 Q. Is that consistent with the fact that you told us
11 later on that, when the accident investigators tried to
12 reassemble what had happened on the Lion Air aircraft, there
13 had been no simulator training for those pilots?

14 A. There had been none.

15 Q. At page 157, the Committee found, "In
16 December 2017, Mr. Fortner informed a colleague in an
17 Instant Message exchange that he made a foreign airline" --
18 again, foreign airline -- "feel stupid about trying to
19 require any additional training requirements. 'I just Jedi
20 mind-tricked the fools'" Mark Fortner wrote -- or "I should
21 be given a thousand dollars every time I take one of these
22 calls," he said. And then added, "I saved this company a
23 sick amount of \$\$\$\$."

24 Is that something you were familiar with as well?

25 A. I am.

1 Q. And is that consistent with the information that
2 you've been describing about how foreign airlines did not
3 have additional training, I think is the way Mr. Fortner was
4 putting it?

5 A. It is.

6 Q. The House committee wrote, "Even after the fatal
7 Lion Air crash, Boeing maintained that its rationale for
8 removing references to the MCAS from the 737 training manual
9 was still valid. Boeing asserted that the addition of MCAS
10 on the 737 MAX did not affect knowledge, skills, abilities,
11 or flight safety."

12 Were you aware of that finding?

13 A. Yes.

14 Q. And was that consistent again with what you were
15 telling us happened in those two crashes --

16 A. Yes.

17 Q. -- where they were not knowledgeable about these
18 issues?

19 A. Yes.

20 MR. CASSELL: I now have two emails that I'm going
21 to provide. It's going to be -- I think we are up to
22 Families' Exhibit 5?

23 So we are going to have Families' Exhibit 5.
24 Let's see. We will have Families' Exhibit 5 and Families'
25 Exhibit 6.

1 I'm going to provide, with the Court's permission,
2 5 and 6.

3 BY MR. CASSELL:

4 Q. So let's take a look at Exhibit -- Families'
5 Exhibit 5. It's got a -- you see a company reference in the
6 upper left-hand corner?

7 MR. CASSELL: So let's take a look at Families'
8 Exhibit 5. Do you see a company reference in the upper
9 left-hand corner?

10 A. Yes.

11 Q. What company is referenced there?

12 A. Boeing.

13 Q. And does it appear to be coming from somebody at
14 Boeing?

15 A. 737 chief technical pilot.

16 Q. And I see a date here. What is the date on this
17 document?

18 A. June 5th, 2017, 9:33 p.m.

19 Q. All right.

20 MR. CASSELL: And, your Honor, let's take a look
21 at -- let's see. If we go down here, the second substantive
22 paragraph says something like, "Perhaps we should begin to
23 discuss at your earliest opportunity."

24 And then there's a reference to the FAA. I'm
25 assuming that's our agency here in the United States.

1 BY MR. CASSELL:

2 Q. It says, "EASA." Do you know what EASA would
3 refer to?

4 A. I believe that's the European Aviation Safety
5 Authority.

6 Q. And then there's reference to Transport Canada.
7 Do you know what that might be?

8 A. That would be the Canadian equivalent of the FAA.

9 Q. And I see Chinese, Malaysia, and Argentinian
10 authorities. In context, does that seem to be the aviation
11 authorities?

12 A. I would assume they are, yes.

13 Q. It says, "They have all accepted CBT" -- I guess
14 that's computer-based training? -- "requirement as the only
15 training needed"?

16 A. Yes.

17 Q. "They would be happy to share with you other
18 information."

19 Was this the kind of information that an expert
20 like you would rely upon in reaching conclusions like the
21 type you've --

22 A. Yes.

23 Q. -- reached today?

24 And have you seen this email earlier?

25 A. Yes, I have.

1 MR. CASSELL: Your Honor, I will represent to the
2 Court that, in the House Committee report that I referred to
3 earlier, there is a hyperlink to additional documents that
4 support the finding of the committee. And that's where
5 plaintiffs' counsel have -- I should say families' counsel
6 have secured this email.

7 And at this time, I would offer Families'
8 Exhibit 5. I do not believe the authenticity of this
9 document can be reasonably questioned.

10 And if the authenticity is questioned, we would
11 request an opportunity to call the appropriate witnesses
12 from Boeing to establish its authenticity.

13 MR. JACOBS: Objection, hearsay.

14 MR. HANEY: Join the objection.

15 THE COURT: Overruled.

16 Exhibit 5 will be admitted.

17 (Exhibit 5 was admitted into evidence.)

18 MR. CASSELL: And, your Honor, just to speed
19 things up, I will represent that document 6 is a similar
20 document.

21 THE COURT: Okay. I will overrule the same
22 objections.

23 Exhibit 6 will be admitted.

24 (Exhibit 6 was admitted into evidence.)

25 ///

1 (BY MR. CASSELL:)

2 Q. And this document says -- once again, I think
3 we've actually talked about some of this information -- the
4 statement that I want to direct your attention to is one
5 that we have not had an opportunity to the talk about.

6 If you work your way down about 80 percent of the
7 page, we see from a Boeing employee, "I think we should hold
8 firm at zero dollars."

9 And this document says, once again -- I think
10 we've actually talked about some of this information. But
11 the statement that I want to direct your attention to is one
12 that we have not had an opportunity to talk about.

13 If you work your way down about 80 percent of the
14 page, we see from a Boeing employee, "I think we should hold
15 firm at zero dollars," and then there's a sentence. This is
16 the sentence I wanted to direct your attention to, sir.

17 It says, "FAA is pretty powerful, and most
18 countries defer to what the FAA does, except for the
19 national authorities that are stuck in the stone ages, JCAB
20 and ANAC." Do you see that sentence?

21 A. Yes, I have seen it.

22 Q. And is that -- I know today you were talking about
23 other countries deferring to the FAA. Do you see this email
24 as confirming or contradicting the conclusions?

25 A. I believe it confirms it.

1 Q. And this looks from what -- this is a Boeing
2 document?

3 A. I believe it is. It says "Boeing."

4 Q. Now, I want to talk to sort of --

5 MR. CASSELL: Let's see. Your Honor, I know your
6 Honor has been very patient. I see I have about five more
7 pages of notes here. I would estimate 10 or 15 minutes --

8 THE COURT: Okay.

9 MR. CASSELL: -- to wrap things up.

10 BY MR. CASSELL:

11 Q. Let's talk a little bit about the risk that those
12 Indonesian passengers and crew faced.

13 I want to take you to approximately 6:20 a.m.
14 local time on October 29th, 2018, when Lion Air, Flight 610,
15 a Boeing 737 MAX, was on the runway and taking off from
16 Jakarta. Is it your opinion that Boeing's conspiracy of
17 lies created a risk to the passengers and crew at that time?

18 A. Yes.

19 Q. Let's unpack that conclusion just a little bit.
20 As that plane was revving up to take off, what kind of
21 training risk were the passengers and crew subjected to?

22 A. At that point, at that immediate point, they were
23 not subjected to any risk. However, once the airplane took
24 off, then the system in question, the MCAS system, could be
25 activated, at which point the crew, once again, if they were

1 improperly trained or not completely trained or did not have
2 a complete understanding of the system and what was
3 happening in front of them -- excuse me -- would then
4 obviously place the crew, the plane, and all passengers on
5 board at risk for a catastrophic event.

6 Q. A catastrophic event, like the death of 189
7 people?

8 A. Yes.

9 Q. What kind of aircraft manual risk -- and you're
10 right. I had them on the runway. Let's assume the plane is
11 one minute into its flight.

12 What sort of risks were the passengers and crew
13 subjected to because of the nature of the aircraft manuals
14 that were on board the flight at that time?

15 A. The same.

16 Q. And what about any emergency checklist risk when
17 the plane was airborne?

18 What kind of risk would they be under?

19 A. Under the circumstances, the checklist would have
20 been incomplete.

21 Q. I now want to present you with a hypothetical set
22 of facts and get your expert opinion on it.

23 For purposes of this question, I want you to
24 assume that Boeing did not engage in a conspiracy to defraud
25 the FAA about the new MCAS. Instead, Boeing had behaved as

1 a lawful corporation and complied with its obligations and
2 properly disclosed the MCAS to the FAA AEG.

3 Based on your expert understanding of the FAA and
4 ICAO and other aeronautical issues, can you trace through,
5 with a reasonable degree of aeronautical certainty, what
6 things might have looked like as that plane was taking off
7 in this alternative world?

8 A. I believe I can say, with a reasonable degree of
9 certainty, that that plane, in that situation, would have
10 been successfully recovered and able to return for a safe
11 landing, thereby preserving life and property.

12 Q. You said, "Preserving life and property." 189
13 people would have lived?

14 A. Yes.

15 Q. And I want to take you to the Ethiopian flight.
16 With regard to approximately 8:30 a.m. local time -- maybe I
17 should make that 8:39 a.m. local time -- shortly after the
18 plane has taken off.

19 On March 10, 2019, Ethiopian Airlines, Flight 302,
20 was taking off from Addis Ababa. Did Boeing's conspiracy
21 create a risk to the passengers and crew on that flight?

22 A. Yes.

23 Q. And to briefly run through the checklist, was
24 there a training risk that the passengers and the crew were
25 subjected to?

1 A. Inadequate training, yes.

2 Q. How about an aircraft manual risk?

3 A. Inadequate information in the manual.

4 Q. Emergency checklist risk?

5 A. Incomplete checklist.

6 Q. And now I want to present you a hypothetical set
7 of facts and get your expert opinion on it.

8 For purposes of this question, I want you to
9 assume that, contrary to fact, Boeing did not engage in a
10 conspiracy to defraud the FAA about the new MCAS system.
11 Instead, Boeing lawfully complied with its obligations and
12 disclosed the MCAS to the FAA AEG.

13 Based on your expert understanding of the FAA,
14 ICAO, and the other issues we've been talking about today
15 and have previously traced through, to a reasonable degree
16 of aeronautical certainty, what would the world have looked
17 like if Boeing hadn't lied?

18 A. Once again, I believe, to a degree -- certain
19 degree of certainty -- correction -- of certainty that the
20 crew would have been properly trained, would have reacted
21 appropriately to the emergency, recovered to normal flight,
22 and been able to return to the airport for the safe landing
23 and preservation of life and property.

24 Q. 157 people would be alive?

25 A. Yes.

1 Q. Now, let's -- we've talked about the crashes.
2 Just one or two more things here. I want to take you now to
3 January 7th, 2020. That's a year or two after the crashes.

4 Boeing made an announcement in which it
5 recommended 737 MAX simulator training, in addition to
6 computer-based training. Boeing stated, "This
7 recommendation takes into account our unstinting commitment
8 to the safe return of service, as well as to changes in the
9 airplane."

10 Can you help me understand that?

11 When they said they're asking for simulator
12 training, what was Boeing talking about?

13 A. They were talking about the change from Level B to
14 Level D training for that variant of the 737.

15 Q. Did Boeing's concession come too late for the 346
16 passengers and crew on Lion Air 610 and Ethiopian Airlines
17 302?

18 A. According to that document, it did.

19 Q. And I take it the FAA, then, ultimately did, as
20 you were suggesting, approve Level D training for the 737
21 MAX?

22 A. They did.

23 Q. All right. Two more pages of notes here.

24 MR. CASSELL: I'm going to now offer Families'
25 Exhibits 7, 8 and 9; 7 is a two-page document, 8 is a

1 two-page document, and 9 is a two-page document. I don't
2 have a stapler immediately at hand.

3 With the Court's permission, I have three
4 documents here, providing to opposing counsel.

5 BY MR. CASSELL:

6 Q. These are something that I will represent are
7 known as a Continued Airworthiness Notification to the
8 International Community. I think that's called a CANIC or
9 CANIC or something like that?

10 A. Yes, that's an acronym.

11 Q. Looking at the first one, I see it's dated
12 March 11th, 2019. I guess one of the issues in this case
13 has been whether the FAA ever talks to other regulators or
14 other airlines around the world.

15 So if I could direct your attention to the "From"
16 item here. It says "From the FAA." Is that your
17 understanding of where this came from?

18 A. Yes.

19 Q. And then if we can jump up above that, it goes to
20 "Civil Aviation Authorities." Can you tell me what that
21 would be a reference to?

22 A. Civil Aviation Authorities would be the
23 counterpart to the FAA in foreign countries.

24 Q. So here is the FAA talking to the regulators in
25 other countries. What are they talking about?

1 A. They're talking about the situation that had
2 occurred with the Ethiopian flight and some of the
3 information -- preliminary information that was gleaned from
4 that. It was passed on to 3 -- 59 operators worldwide.

5 Q. Fifty-nine operators. So that's on page 2 of the
6 document there?

7 A. Yes.

8 Q. I don't want you to read through all 59, but there
9 are two operators that are of keen interest to this hearing.

10 Do you see the Lion Air indicated as one?

11 A. Lion Air is in there, yes.

12 Q. How about Ethiopian Air?

13 A. Ethiopian is in there also.

14 Q. So there is a situation where we see the FAA
15 communicating directly with the airlines who were affected
16 by these two crashes?

17 A. Yes.

18 MR. CASSELL: Your Honor, I would proffer that
19 this is a legitimate document from the FAA. We could call
20 experts, if the government wants to dispute it, but I would
21 move at this time the admission of Families' Exhibit 7.

22 MR. JACOBS: Objection, hearsay.

23 MR. HANEY: Join the objection.

24 MR. CASSELL: Your Honor, if I could just briefly
25 respond?

1 THE COURT: 7, 8 and 9?

2 MR. CASSELL: 7, 8, and 9 are all going to be of
3 similar character.

4 THE COURT: And they will be admitted.

5 (Exhibits 7, 8 and 9 were admitted into evidence.)

6 MR. CASSELL: And again, the limited point that
7 we're offering these for is simply to show that the FAA is
8 in close contact with its counterparts overseas, as well as
9 airlines affected. If 7, 8 and 9 have been accepted --
10 BY MR. CASSELL:

11 Q. Are these of a similar character to item 7 when we
12 look at Exhibit 8?

13 A. They appear, to be, yes.

14 Q. All right.

15 MR. CASSELL: And then just one last exhibit.

16 And then about two more minutes, your Honor, and
17 then -- I appreciate your patience. Obviously, a lot of
18 material to cover here today.

19 And we have one document that is two pages long,
20 Families' Exhibit 10. With the Court's permission?

21 Families' Exhibit 10 is dated January 7, 2021. I
22 believe that's the date this Court got involved in this case
23 when Boeing and the government filed a DPA with this Court.

24 BY MR. CASSELL:

25 Q. I will represent to you that this is a press

1 release from the United States Department of Justice. I
2 want to direct your attention to, I think it's the fourth
3 sentence down, the United States Department of Justice put
4 out a press release when it was announcing its agreement in
5 this case.

6 It said, "The misleading statements, half-truths,
7 and omissions communicated by Boeing employees to the FAA
8 impeded the government's ability to ensure the safety of the
9 flying public, including" -- I'll stop there.

10 Do you see that statement?

11 A. Yes, I do.

12 Q. Is that consistent with the opinions you've been
13 offering here today?

14 A. Yes, it is.

15 Q. And with the passengers whose safety was
16 impeded -- or, I'm sorry. Let me figure out how to phrase
17 this.

18 The government says that the lies impeded the
19 government's ability to ensure the safety of the flying
20 public.

21 Would that include the 346 people who died on
22 those two flights?

23 A. Yeah.

24 MR. CASSELL: Your Honor, at this time, I would
25 offer Families' Exhibit 10 as an admission by a party

1 opponent, the United States Department of Justice.

2 THE COURT: All right. It will be admitted.

3 (Exhibit 10 was admitted into evidence.)

4 MR. CASSELL: Your Honor, were you thinking of
5 taking a break at this point?

6 THE COURT: No.

7 MR. CASSELL: I will check here and make sure my
8 colleagues haven't noticed something I've missed.

9 MR. HANEY: Your Honor, just for the record, we
10 would object to Exhibit 10 as hearsay.

11 THE COURT: That will be overruled.

12 MR. HANEY: Thanks.

13 MR. CASSELL: Your Honor, that concludes our
14 direct examination of Mr. Keyes.

15 THE COURT: All right. Mr. Jacobs.

16 CROSS-EXAMINATION

17 BY MR. JACOBS:

18 Q. Good morning, Mr. Keyes.

19 A. Morning.

20 Q. Mr. Keyes, my name is Cory Jacobs. I'm an
21 attorney with the Justice Department. It's nice to meet
22 you.

23 Sir, we haven't previously met each other,
24 correct?

25 A. Pardon me, sir?

1 Q. We haven't previously met?

2 A. No, we have not.

3 Q. So, sir, I would just like to walk through your
4 references that are on the last pages, page 13, of what is
5 in evidence as Families' Exhibit 1.

6 Do you still have that in front of you?

7 A. What document are we looking at, sir?

8 Q. Sure. So it's Exhibit -- it's Families'
9 Exhibit 1, but it's the references that are on the last page
10 of your expert report.

11 A. Okay.

12 Q. There are a few things that Mr. Cassell asked you
13 about. I just want to walk through those just briefly.

14 So Mr. Cassell asked you about the final committee
15 report, "The Design, Development, and Certification of the
16 Boeing 737 MAX."

17 Is that something that you were part of drafting,
18 sir?

19 A. No, I was not.

20 Q. Did you speak with anybody who had a role in
21 drafting that report?

22 A. No, I did not.

23 Q. Mr. Cassell asked you about No. 3, which was the
24 Republic of Indonesia, Final Aircraft Accident Investigation
25 Report.

1 Did you author that report, sir?

2 Did you author that report?

3 A. No, I did not.

4 Q. The acoustics are tough. I will try to be clear.

5 Did you speak with anybody who also authored that
6 report?

7 A. No, I did not.

8 Q. And No. 4, which was the Ethiopian Airlines Crash
9 Report, same question: Did you author that report?

10 A. No, I did not.

11 Q. Did you speak with anybody who authored that
12 report?

13 A. No, I did not.

14 Q. And you were also asked about the number of United
15 States codes and CFRs that would apply to the FAA.

16 Now, sir, I understand that you worked for the FAA
17 for a number of years, right?

18 A. Yes.

19 Q. Did you ever have an experience at the FAA where a
20 decision was made by someone else that you disagreed with?

21 A. Internally, you mean?

22 Q. Correct.

23 A. Yes.

24 Q. In a large federal regulatory agency like the FAA,
25 there are often a lot of people involved in making a

1 particular decision about a topic, right?

2 A. Correct.

3 Q. And so, while you can give your view about what
4 you think the FAA would do with respect to a particular
5 issue, it can be complicated, right?

6 A. It can be, yes.

7 Q. And your view here today, it's your educated
8 guess, correct?

9 A. Educated, yes.

10 Q. But it's not --

11 MR. CASSELL: Your Honor, could I ask for a
12 clarification on what specific opinion is being referred to
13 here?

14 BY MR. JACOBS:

15 Q. Sure.

16 So it's your opinion, sir, in your expert report
17 that, had the AEG had the complete dataset about MCAS
18 training, that it would have required a level of differences
19 training greater than Level B, correct?

20 A. Yes, correct.

21 Q. And that's just your educated view, correct?

22 A. It's my considerate opinion.

23 Q. But not absolute certainty, correct?

24 A. I can be fairly certain on that, yes.

25 Q. But it's not absolute, right?

1 Like you said, there are often a number of people
2 involved in the decision-making process, and so anything
3 could have happened, correct?

4 A. A lot of input for it, but I am certain that that
5 was the opinion that the AEG came up with based on their
6 internal documentation.

7 Q. Now, sir, you said that you did not have an
8 opportunity to review the 737 MAX, FSB report that was in
9 place at the time of the accident, correct?

10 A. Correct.

11 Q. And you were not part of the evaluation or
12 decision-making process for that FSB report, right?

13 A. Correct.

14 Q. Have you been part of the evaluation process or
15 the drafting of any 737 MAX --

16 A. No, sir.

17 Q. -- FSB report?

18 What about any FSB report for any version of the
19 737?

20 A. No, sir.

21 Q. And, sir, before you came to court today, did you
22 have an opportunity to look back at the 737 MAX, FSB report
23 that was in place at the time of the accident?

24 A. No, I have not.

25 Q. So do you know what was actually in that 737 MAX,

1 FSB report as it relates to MCAS?

2 A. Only from what I've read in the documents that
3 were provided to me.

4 Q. And is it fair to say that there was only the
5 words "Maneuvering Characteristic Augmentation System," but
6 no actual description of how the system operated?

7 A. I believe so, yes.

8 Q. Sir, are you type rated to fly the 737 MAX?

9 A. I am not.

10 Q. Are you type rated to fly any version of a Boeing
11 737?

12 A. No, sir, I am not.

13 Q. Sir, you were asked some questions about the FSB
14 report and its applicability around the world. Do you
15 remember that?

16 A. Yes, sir.

17 Q. Does the FAA's FSB report, does that bind foreign
18 regulatory authorities or aviation regulatory authorities?

19 A. No, it does not.

20 Q. Are foreign aviation regulatory authorities able
21 to make their own educated evaluations and decisions about
22 what training to put in place for the airlines that operate
23 in their countries?

24 A. They are.

25 Q. And understanding that the FAA didn't have all

1 information about how MCAS was designed to operate,
2 particularly within the AEG, the FAA still didn't require
3 simulator training, at the outset, for the 737 MAX, correct?

4 A. Correct.

5 Q. Now, do you know whether other regulators outside
6 of the U.S. did, in fact, require simulator training for the
7 MAX at the outset?

8 A. I saw no indication that anybody required it in
9 any other country.

10 Q. Do you know whether the Brazilian aviation
11 authorities actually took a different path than the FAA and
12 required simulator training for the MAX?

13 A. I'm not sure, no.

14 Q. You're just not sure?

15 A. No, I don't know.

16 Q. Okay. You testified that you thought that a
17 country that didn't have -- I'm just trying to paraphrase --
18 resources, you said that you would think that they would
19 follow the FAA in what they published in the FSB, right?

20 A. Yes.

21 Q. Have you worked directly with any foreign aviation
22 regulatory authorities?

23 A. Yes.

24 Q. Have you worked with the Ethiopian aviation
25 regulatory authorities directly?

1 A. No.

2 Q. What about the Indonesian --

3 A. No.

4 Q. -- aviation?

5 No to both?

6 A. No to both.

7 Q. Did you speak with anybody from either one of
8 those aviation authorities before testifying here today,
9 sir?

10 A. No, I did not.

11 Q. And so, sounds like it's your view that you think
12 that those two countries -- let me just make it clear.

13 Do you think those two countries are countries
14 that would lack resources such as they would just rely on
15 the FAA's publications?

16 A. I could not make that assumption.

17 Q. And, sir, you are relying on some of the
18 information that's contained within each of their accident
19 reports, correct?

20 A. Correct.

21 Q. You're relying on information that's contained
22 within the Ethiopian Airlines crash report and the Indonesia
23 Lion Air crash report, correct?

24 A. Correct.

25 Q. And as it relates to those crash reports, you

1 don't have any reason to doubt the accuracy of those crash
2 reports, correct?

3 A. I have no reason to doubt that.

4 Q. You have no reason to doubt that those countries
5 have the resources to do an independent investigation and
6 get to the bottom of things, like an airline crash, correct?

7 A. Correct.

8 Q. Now, I think you said that before coming to court
9 to learn about MCAS, you Googled it?

10 You looked it up on Google?

11 A. Yeah, I Googled it and looked at some other
12 professional publications and -- just trying to get an idea
13 what MCAS was all about.

14 Q. And, sir, I'm not an engineer. Are you an
15 engineer?

16 A. No, sir, I am not.

17 Q. Did you have any role on engineering or designing
18 MCAS?

19 A. No.

20 Q. Did you provide any kind of consulting expertise
21 about how MCAS would be engineered and designed?

22 A. No, sir.

23 Q. And, sir, now that you've learned a bit about
24 MCAS, are there certain things about how MCAS was designed
25 and engineered and would operate that concern you?

1 MR. CASSELL: Your Honor, objection. I think this
2 is beyond the scope of direct.

3 THE COURT: Overruled.

4 THE WITNESS: I couldn't answer that.

5 BY MR. JACOBS:

6 Q. Why not?

7 A. I don't have enough knowledge of it, how it was
8 put together, how it was engineered.

9 Q. What about how it would operate?

10 A. Only a very, very rudimentary understanding of it,
11 but that's as far as it goes.

12 Q. A very rudimentary understanding about how MCAS
13 would operate?

14 A. Yeah.

15 Q. Okay. Are you familiar with what some people have
16 described as how MCAS could ratchet, sort of a ratcheting or
17 an unlimited ability to ratchet?

18 A. I'm familiar with that.

19 Q. And how it would essentially put the plane in a
20 full nose-down position, as it was originally designed, if
21 it engaged. Are you familiar with that?

22 A. Yes, sir.

23 Q. Is that something that, as you've learned about
24 that, that concerns you?

25 A. Yes, sir.

1 Q. And why is that?

2 A. Well, it's going to put the aircraft in an unusual
3 situation or an unusual attitude. And for the most part,
4 from the beginning of a pilot's training, when they --
5 before they even get their private pilot certificate, we
6 train for unusual attitude and unusual attitude recovery.

7 As you get into more sophisticated aircraft, the
8 recovery gets a little bit more complicated and requires
9 more input, more training, more experience.

10 Q. And are you familiar with how MCAS, as it was
11 originally designed, relied only on a single angle-of-attack
12 sensor?

13 A. That was my understanding, yes.

14 Q. Is that also something that, as you sit here
15 today, looking at the system in hindsight, is concerning?

16 A. For a single source, yes, I would say that it's
17 concerning. And it's surprising that there's not a
18 redundancy for that.

19 Q. And in your expert report you've used the term
20 "Critical information" about MCAS that the FAA wasn't aware
21 of.

22 Is that something that you would consider to be
23 critical information, that MCAS could ratchet all the way
24 until the plane was nose-down?

25 A. I believe so, yes.

1 Q. And also that it would rely on a single
2 angle-of-attack vane, as it was originally designed?

3 A. Yes.

4 Q. And is that part of what you would call the
5 "complete dataset" that you believe would have impacted the
6 AEG's decision about what level of training to put in place
7 for the MAX?

8 A. I believe that if they had it, they might have --
9 they would have made a different determination.

10 Q. If they had known about the ratcheting, correct?

11 A. Yeah, if they had known the extended parameters of
12 the MCAS.

13 Q. What about if they had known about the ratcheting?
14 Is that something that would have impacted their
15 decision, part of that complete dataset?

16 A. It could have, yes.

17 Q. And the single AOA vane, also part of that
18 complete dataset?

19 A. It could have, yes.

20 Q. Why are you saying that "it could have"?

21 A. I don't know what the thought process was for the
22 AEG on that. I can only go by what their guidelines are and
23 how they applied those guidelines to come up with a
24 determination of the level of training.

25 Q. Sir, it's your opinion in your report that, if the

1 AEG had the complete set of data, that it would have
2 impacted their training decision. I'm just trying to
3 understand the distinction that you're making between your
4 expert report, where you say it, "would have" impacted their
5 training, and what I hear you testifying to right now is
6 that it "could have" impacted their training.

7 A. It would have definitely impacted the training
8 decision.

9 Q. So why are you just explaining how it certainly
10 could have impacted their training, but there's a lot that
11 goes into the thought process, and you can't quite say?

12 A. I'm sorry, say that again.

13 Q. Well, I think that you were just saying, sir, that
14 there's a lot of considerations that would go into the AEG's
15 thought process if they had this complete set of data, and
16 so it could have impacted their decision, but you can't
17 quite say.

18 A. It definitely would have.

19 Q. That's your opinion now?

20 A. Yes. It would have, because they would have taken
21 input from the members of the AEG. They would have taken
22 the information from the appropriate people at Boeing. They
23 would have had their discussions. They would have applied
24 their formulas for making the determination and then made
25 their determination based on that dataset.

1 Q. Sir, I have you -- I think I asked you -- but have
2 you worked with the Aircraft Evaluation Group before?

3 A. No.

4 Q. And have you worked with Stacey Klein from the
5 Aircraft Evaluation Group?

6 A. No, I have not.

7 Q. Have you ever met Stacey Klein?

8 A. I have not.

9 Q. So you have no reason to doubt Miss Klein's
10 credibility or her credentials, correct?

11 A. Correct.

12 Q. Sir, you were asked some questions about the 737
13 MAX House Committee Report.

14 You didn't author that report, right?

15 A. No, I did not.

16 Q. And did you talk with the authors or anybody who
17 had input into that particular report?

18 A. No, I did not.

19 Q. And you weren't involved in the committee's
20 investigation, right?

21 A. I was not.

22 Q. Just taking a look at page 138.

23 THE COURT: Which document are we looking at?

24 MR. JACOBS: Sure. So this is Exhibit 4. This is
25 Families' Exhibit 4. This is the final committee report.

1 THE WITNESS: Would you say the page again,
2 please?

3 BY MR. JACOBS:

4 Q. Of course.

5 So I'm looking at page -- I'm looking at page --
6 if you could turn to page 142 of what's in evidence in
7 Families' Exhibit 4.

8 Do you see those pages, sir?

9 A. I have them.

10 Q. So page 141 talks about faulty assumptions. And
11 then page 142, just reading the first paragraph of page
12 142 -- and I'll just read it. "It is most alarmingly Boeing
13 made these assumptions despite the fact that it had internal
14 test data that contradicted them.

15 "In 2012, for instance, it took one of Boeing's
16 own test pilots more than 10 seconds during a simulator test
17 to respond to MCAS activation. The pilot found this
18 catastrophic.

19 "Boeing did not inform the FAA about this test
20 data. It appears to have discounted the test results,
21 falsely assuming that pilots would quickly recognize and
22 respond to uncommanded MCAS activation." Do you see that?

23 A. Yes.

24 MR. CASSELL: Objection, your Honor. I think the
25 next sentence should be read in the interest of

1 completeness.

2 MR. JACOBS: Sure.

3 BY MR. JACOBS:

4 Q. "In the end, MCAS played a key role in both MAX
5 crashes." Do you see that?

6 A. Yes, sir.

7 Q. Now, sir, do you know anything about the
8 assumptions that Boeing made in the process of going into
9 those assumptions during the evaluation of the MAX?

10 A. Only what I've read in the documents I was
11 presented.

12 Q. Do you know who from The Boeing Company was
13 involved in making those assumptions?

14 A. I do not.

15 Q. Do you know whether any of the technical pilots
16 from The Boeing Company were involved in making those
17 assumptions?

18 A. From my readings, I believe they were.

19 Q. Do you know whether Mark Fortner was involved in
20 the flight test program and the assumptions that were made
21 with respect to the 737 MAX?

22 A. From the documents I have read, I believe he was.

23 Q. Do you know whether he was?

24 A. Yes.

25 Q. You know Mark Fortner was actually involved in

1 this assumption process and assumptions?

2 A. Oh, I'm sorry. No, I do not know if he was
3 involved in that assumption process directly.

4 Q. Thank you. Okay.

5 Do you know whether anybody from the flight
6 technical group was involved in that particular assumption
7 process that would have worked with Mark Fortner?

8 A. I believe so, based on the documents that I've
9 read.

10 Q. You believe that they were or you believe they
11 were not?

12 A. That they were.

13 Q. The technical pilots?

14 A. Yes.

15 Q. Not the test pilots?

16 A. Technical pilots, yes.

17 Q. Okay. You know there's a distinction between -- I
18 don't mean to belittle you -- there's a distinction between
19 a test and a technical pilot?

20 A. Yes.

21 Q. Okay. What's your basis to believe that someone
22 from the flight technical group was actually involved in
23 test pilot work, in making assumptions about how a pilot
24 would respond to an erroneous MCAS activation?

25 What's the basis for that?

1 MR. CASSELL: Your Honor, I would like to object
2 at this point. I just -- for two grounds. One is the
3 United States Department of Justice has accessed the Grand
4 Jury information that is allowing them to formulate a series
5 of questions about internal Boeing actions that we have not
6 had access to. It's fundamentally unfair to cross-examine
7 our witness based on secret information, as well as issues
8 surrounding potential disclosure of grand jury information.

9 The second is that we have pending, as your Honor
10 is aware, a motion for discovery for much of this
11 information from the Department of Justice. Your Honor has
12 held ruling on that motion in abeyance. But it seems to me,
13 once again, we're being unfairly deprived of information
14 that's allowing the Justice Department to formulate the
15 questions about internal actions that we are not in a
16 position to respond to effectively.

17 MR. JACOBS: Your Honor, the witness is simply
18 saying --

19 THE COURT: Let me just stop you. I'm going to
20 overrule the objection.

21 You can answer the question, if you can. If you
22 can't or if you need further information, then you can just
23 say, "I will need further information."

24 THE WITNESS: Okay. Thank you, your Honor.

25 Okay. Would you please restate the question?

1 BY MR. JACOBS:

2 Q. Sure.

3 You've testified that, based on some of the things
4 that you've reviewed, that you have reason to believe that
5 technical pilots, which may -- I think you said did not
6 include Mack Fortner, but other technical pilots may have
7 been involved in the assumption-making process at The Boeing
8 Company. I'm asking you what did you read?

9 What is the basis for that statement?

10 A. Again, on the documents that I have read, I
11 believe that would be the case.

12 Q. And what document do you recall reading where a
13 technical pilot was involved in making these types of
14 assumptions?

15 A. Yes, it was the -- I don't know the exact one --
16 name of that document, but where we had the Statement of
17 Facts is where I read that and would have made that
18 assumption.

19 Q. From the Deferred Prosecution Agreement, Statement
20 of Facts?

21 A. I believe that would be the name of the document.

22 Q. Okay. Sir, if you could also, just while we have
23 it, turn to page 86 of this same exhibit. Are you there?

24 A. Eighty-six?

25 Q. Yes, sir.

1 A. Yes, I'm there.

2 Q. And under the heading of, "Investigative
3 Findings," in looking at the last two bullet points,
4 "Boeing's chief project engineer on the 737 MAX program was
5 unfamiliar with key design aspects of MCAS when he approved
6 of its design, including its reliance on a single AOA sensor
7 and its abilities to activate repeatedly." Do you see that?

8 A. Yes, sir.

9 Q. Mark Fortner was not the chief project engineer,
10 right?

11 A. Correct.

12 Q. So Mark Fortner was not the person who was
13 unfamiliar with these key design aspects of MCAS, including
14 it's reliance on a single AOA sensor, and its ability to
15 activate repeatedly?

16 That's not what this is saying, correct?

17 A. Correct.

18 Q. And the second bullet, "Boeing's design of MCAS
19 violated its own internal design requirements, which
20 demanded that the system not have any 'objectionable
21 interaction with the piloting of the airplane and not
22 interfere with discovery' which occurred in both 737 MAX
23 crashes."

24 Again, this is not referring to Mark Fortner?

25 This is referring to the design and the

1 engineering of MCAS, something that Mark Fortner was not
2 part of, correct?

3 A. I believe so, but it says there that it violated
4 its own internal design requirements. I have no idea what
5 their own internal design requirements were.

6 Q. Do you know whether Mark Fortner was involved in
7 dealing with Boeing's internal design requirements?

8 A. I have no knowledge of that.

9 Q. There was something that you said earlier, and I
10 just -- I couldn't quite hear it. I heard you say the first
11 part of it. You said, It's not my bailiwick, the
12 machination of," and then there was something about the
13 crashes.

14 Do you remember something like that?

15 A. Yes. I don't believe I used that word
16 "bailiwick."

17 Q. I think that you used the word "bailiwick" because
18 it stood out in my mind.

19 A. Okay. I don't recall that. I may have used it.

20 Q. Sure.

21 So I think what you were saying, though, when you
22 were being asked some questions by Mr. Cassell about MCAS
23 and its role in the crashes, I think what you said was,
24 "This is not my bailiwick, the machination of MCAS and its
25 role in that crash."

1 Does that sound familiar to you?

2 A. Yes.

3 Q. Is that what you were saying?

4 A. I believe so, yes.

5 Q. Do you stand by that?

6 A. I stand by the statement that I am not educated or
7 well-versed in MCAS. I feel comfortable in knowing what the
8 procedures are for accident investigation and approving
9 training and things of that nature.

10 Q. You testified that, had the pilots in the Lion Air
11 flight had information in their manuals about MCAS, that you
12 believe that that information would have allowed them to
13 successfully recover and land the plane, right?

14 A. Yes.

15 Q. You said that the lack of information,
16 essentially, didn't allow them to successfully recover that
17 plane?

18 A. Correct.

19 Q. Sir, was there a plane, a flight, right before the
20 crash flight that also experienced an erroneous MCAS
21 activation?

22 A. My understanding, there was.

23 Q. And what happened to that plane?

24 A. That plane made a successful landing.

25 Q. Without information in the manuals about MCAS,

1 correct?

2 A. Yes.

3 Q. You were also asked a series of hypothetical
4 questions, and the hypos all included some form of, if The
5 Boeing Company had disclosed MCAS to the AEG, right?

6 Do you remember that, generally being asked as
7 part of those hypos?

8 A. Yes.

9 Q. But MCAS was disclosed to the AEG, correct?

10 A. I believe it was, yes.

11 Q. Right. And so the AEG did have information about
12 MCAS existing, correct?

13 A. Yes.

14 MR. CASSELL: Your Honor, could we ask some
15 clarification on the time frame Mr. Jacobs is referring to
16 precisely, a little more precision?

17 MR. JACOBS: Sure.

18 BY MR. JACOBS:

19 Q. So during the certification process of the 737
20 MAX, before the FSB report for the MAX was published, MCAS
21 was disclosed to the Aircraft Evaluation Group, correct?

22 A. Correct.

23 MR. CASSELL: Your Honor, I'm going to object. My
24 understanding is that --

25 Could I just have a moment to confer, your Honor?

1 THE COURT: Well, I'll tell you what. Why don't
2 we go ahead and take a lunch break now. I have to take care
3 of some things. So let's start back up at 1:30. 1:30.

4 MR. CASSELL: Thank you, your Honor.

5 MR. JACOBS: Thank you, your Honor.

6 MR. CASSELL: Your Honor, one quick question. Are
7 we permitted to consult with our witness during the break?

8 THE COURT: Yes, you can.

9 MR. CASSELL: Thank you.

10 (Proceedings adjourned at 12:44 a.m.)

11 (Proceedings reconvened at 1:31 p.m.)

12 CONTINUED CROSS-EXAMINATION

13 BY MR. JACOBS:

14 Q. Good afternoon.

15 A. Afternoon.

16 Q. Sir, you testified that you were familiar with the
17 Statement of Facts in the Justice Department's Deferred
18 Prosecution Agreement with The Boeing Company, right?

19 A. Yes, sir.

20 Q. And are you familiar with the trial, United States
21 vs. Mark Fortner?

22 A. I know of it.

23 Q. Do you know that Mr. Fortner --

24 MR. CASSELL: Your Honor, I'm going to object.

25 You will recall that the United States Department of Justice

1 said that that entire trial was not to raise issues
2 involving the crashes. That makes it irrelevant to today's
3 hearing, which obviously does directly involve the crashes.

4 THE COURT: Okay. Well, I will listen to the
5 answer, and then I will disregard it if it isn't relevant.

6 BY MR. JACOBS:

7 Q. Just one question on that.

8 You know Mr. Fortner was acquitted at that trial,
9 correct?

10 A. That is my understanding, sir.

11 Q. Now, when was the last time you read the Statement
12 of Facts from the Deferred Prosecution Agreement, or the
13 DPA?

14 A. I believe I read through them yesterday briefly.

15 Q. And you testified earlier that your opinions are
16 consistent with the representations in the Statement of
17 Facts. You don't agree --

18 You don't disagree with what's in Statement of
19 Facts?

20 A. I do not disagree.

21 Q. I'm sorry, sir?

22 A. I do not disagree with that.

23 Q. You would agree that the Statement of Facts is
24 limited to the conduct of two technical pilots, who are
25 referred to as Boeing Employee 1 and Boeing Employee 2; is

1 that correct?

2 A. Yes, sir.

3 Q. And Boeing Employee 1 we know is Mark Fortner,
4 correct?

5 A. I do not know that.

6 Q. Okay. Any reason to disagree with that?

7 A. No, sir.

8 Q. Is it only Mr. Fortner and Boeing Employee 2 in
9 the Statement of Facts who were alleged to have withheld
10 information about MCAS from the Aircraft Evaluation Group?

11 A. I believe so, yes, sir.

12 Q. Nowhere in the Statement of Facts does it allege
13 that any Boeing employee, other than Mr. Fortner and Boeing
14 Employee 2 intentionally withheld information about MCAS
15 from the Aircraft Evaluation Group, correct?

16 A. I believe so.

17 Q. The Statement of Facts also makes clear that the
18 only information about MCAS that was alleged to have been
19 intentionally withheld from the Aircraft Evaluation Group
20 was that MCAS had been expanded to operate at low speed,
21 right?

22 A. Correct.

23 Q. Nowhere in the Statement of Facts does it allege
24 that any other information about MCAS was intentionally
25 withheld from the Aircraft Evaluation Group, right?

1 A. That's my understanding, yes, sir.

2 Q. Nowhere in the Statement of Facts does it allege
3 that Mr. Fortner or Boeing Employee 2 even knew about all
4 aspects of how MCAS was designed, correct?

5 A. I don't recall whether they had that knowledge or
6 not.

7 Q. Do you recall anything in the Statement of Facts
8 where Mr. Fortner or Boeing Employee 2 were alleged to have
9 known that MCAS relied only on a single AOA event?

10 Do you recall anything like that?

11 A. I believe so, yes.

12 Q. You believe you do?

13 A. I believe so, yes.

14 Q. And this is what you read yesterday in the
15 Statement of Facts?

16 A. I believe so. As I said, I've read many of these
17 documents, so --

18 Q. Would it surprise you if that information actually
19 want wasn't in the Statement of Facts?

20 MR. CASSELL: Your Honor --

21 THE COURT: Hold on.

22 MR. CASSELL: Could I -- there are so many
23 documents flying around in the case. Could I suggest that,
24 if the attorney has a question, he identify which document
25 he's referring to?

1 THE COURT: It's the Statement of Facts you're
2 referring to?

3 MR. JACOBS: The whole time, your Honor.

4 THE COURT: In the DPA?

5 MR. JACOBS: Correct.

6 THE COURT: So do you understand that he's
7 referring to the DPA?

8 THE WITNESS: Yes, sir, I do.

9 THE COURT: The Statement of Facts, the
10 mid-paragraphs?

11 THE WITNESS: Yes, sir.

12 THE COURT: Okay. So now that we got that
13 document identified, go ahead.

14 BY MR. JACOBS:

15 Q. So would it surprise you to learn, sir, that there
16 isn't actually anything in the Deferred Prosecution
17 Agreement, Statement of Facts about whether Mr. Fortner or
18 Boeing Employee 2 knew about the single AOA vane feeding
19 information into MCAS?

20 Would that surprise you to learn that?

21 A. I would be.

22 Q. Okay. Would it surprise you to learn that there's
23 nothing in the Statement of Facts that Mr. Fortner or Boeing
24 Employee 2 knew anything about how MCAS could ratchet to an
25 unlimited degree, essentially putting the plane nose down?

1 Would it surprise you to learn there's nothing in
2 the Statement of Facts about that?

3 A. I would be surprised, yes, sir.

4 Q. Nowhere in the Statement of Facts does it allege
5 that any Boeing employee intentionally withheld information
6 about the fact that MCAS relied on a single AOA vane from
7 anyone at the FAA, right?

8 A. I believe so.

9 Q. Nowhere in the Statement of Facts does it allege
10 that any Boeing employee intentionally withheld information
11 about how MCAS could ratchet to an unlimited degree from
12 anyone at the Aircraft Evaluation Group -- or at the FAA,
13 right?

14 A. I believe so, yes.

15 Q. And nowhere in the Statement of Facts does it
16 allege that Mr. Fortner or Boeing Employee 2 even knew about
17 those two particular aspects of MCAS, the single AOA vane,
18 or the fact it could ratchet to an unlimited degree, right?

19 A. I believe so, yes.

20 Q. Sir, are you aware that Boeing provided
21 information about MCAS's engineering design to the FAA's
22 Aircraft Certification Office?

23 A. Yes, sir.

24 Q. You are aware of that?

25 A. Yes, sir.

1 Q. You are aware that the Aircraft Certification
2 Office --

3 MR. CASSELL: Your Honor, I'm going to object at
4 this point. We've been told throughout these proceedings
5 that the only agency that's at issue is the FAA AEG.
6 Disclosure of other agencies has nothing to do with the
7 subject that we're here for today.

8 THE COURT: What do you say to that?

9 MR. JACOBS: I would like to understand what the
10 witness knows and doesn't know about what the FAA knew about
11 MCAS. He's up here talking about what decisions the FAA
12 would make if they knew certain information.

13 The fact is that the FAA did know certain
14 information about MCAS, and I think it's relevant to this
15 witness's testimony to understand what he knows.

16 THE COURT: Okay. I will allow you. Go ahead.

17 MR. JACOBS: Thank you, your Honor.

18 BY MR. JACOBS:

19 Q. Sir, are you aware that the Aircraft Certification
20 Office certified the 737 MAX as airworthy for U.S.-based
21 airlines?

22 A. Yes.

23 Q. And there's no allegations in the Statement of
24 Facts that any information about MCAS was intentionally
25 withheld from the Aircraft Certification Office, right?

1 A. I believe that's correct.

2 Q. The only allegations in the Statement of Facts is
3 that two Boeing employees, Mr. Fortner and Boeing Employee
4 2, intentionally withheld one fact about MCAS from the
5 Aircraft Evaluation Group, specifically, it's low-speed
6 expansion, right?

7 A. Basically, yes.

8 Q. Now, sir, your opinion in your expert report is
9 that, if the Aircraft Evaluation Group had the "complete
10 dataset about MCAS, it would have determined that a level of
11 differences training above Level B would have been
12 required," right?

13 A. Yes, sir.

14 Q. There's no allegations in the Statement of Facts
15 that Mr. Fortner or Boeing Employee 2 ever had the complete
16 dataset about MCAS, right?

17 A. I do not know that.

18 Q. Based on your review of the statement of the
19 facts, you do not know?

20 A. I don't know that they had the complete set. I
21 would say they did not.

22 Q. Do you have any reason to believe that they had
23 complete information about the complete dataset of MCAS?

24 Or it sounds like you just don't know?

25 A. I would believe that they had the complete set

1 because they made a determination, based on the information
2 that they had, the dataset that they had there at the time.

3 Q. Would it surprise you to learn that Mr. Fortner
4 and Boeing Employee 2 did not have complete information
5 about that complete dataset about MCAS?

6 A. That would surprise me.

7 Q. If Boeing Employee 2 or Mr. Fortner didn't have
8 the complete dataset about MCAS, they couldn't have
9 intentionally withheld that complete dataset from the
10 Aircraft Evaluation Group, right?

11 That makes sense?

12 A. Yes.

13 Q. Sir, what is your understanding of what was
14 disclosed to the Aircraft Evaluation Group about MCAS?

15 A. About what, sir?

16 Q. The system that we've been talking about, MCAS --

17 A. Okay.

18 Q. -- what's your understanding about what was
19 disclosed by The Boeing Company to the Aircraft Evaluation
20 Group about MCAS?

21 A. My understanding is that they disclosed the
22 information about MCAS as it was originally designed.

23 Q. What was your understanding of what Mr. Fortner
24 and Boeing Employee 2 withheld from the Aircraft Evaluation
25 Group?

1 A. My understanding is that the parameters of MCAS
2 were expanded and included much lower airspeeds and that was
3 the information that was withheld.

4 Q. Just that limited piece of information?

5 A. I believe so, yes.

6 Q. And that's consistent with what's in the Statement
7 of Facts, correct?

8 A. Correct.

9 Q. Preparing for your expert testimony today, did you
10 review testimony from the trial of Mark Fortner?

11 A. No, I did not.

12 Q. I asked you earlier about someone named Stacey
13 Klein. You said you didn't know Ms. Klein, right?

14 A. That's correct.

15 Q. Do you know what Ms. Klein's role was at the FAA?

16 A. My understanding was she was the chair of the
17 Aircraft Evaluation Group for the 737.

18 Q. And you are aware that, after the first plane
19 crash, the Lion Air crash, the FAA did not require the 737
20 MAX to be grounded here in the United States, right?

21 A. That's correct.

22 Q. And you are aware that, after the Lion Air crash,
23 the Aircraft Evaluation Group did not require full-flight
24 simulator training for the MAX in the U.S., correct?

25 A. Correct.

1 Q. In fact, the Aircraft Evaluation Group issued an
2 Emergency Airworthiness Directive.

3 Are you familiar with an Emergency Airworthiness
4 Directive, or what that is?

5 A. Yes, sir.

6 Q. Okay. And that Emergency Airworthiness Directive
7 told U.S.-based pilots to follow the runaway stabilizer
8 checklist that all U.S.-based pilots already knew about or
9 had been trained about, right?

10 A. Yes.

11 Q. And you are aware that when the Aircraft
12 Evaluation Group issued this directive after the first plane
13 crash, it knew at this point, because of the crash, that
14 MCAS had been expanded to low speed, right?

15 A. I'm not sure of the exact point in time in which
16 the Aircraft Evaluation Group learned of that expansion.

17 Q. And that piece of information, though, that MCAS
18 had been expanded to operate at low speed, you've just
19 agreed was the only piece of information that was alleged to
20 have been withheld from the Aircraft Evaluation Group by
21 Mr. Fortner and Boeing Employee 2, correct?

22 MR. CASSELL: Your Honor, I'm going to object. I
23 believe the government is backing away from paragraph 51 in
24 the Statement of Facts, which indicates that, even following
25 the Indonesian Air crash there continued to be misleading

1 representations from Boeing about the scope of MCAS.

2 You have already ruled the presentation today is
3 restricted to strictly following the Statement of Facts. So
4 I would object on the basis of paragraph 51.

5 THE COURT: What do you say to that? Because you
6 are limited to your DPA Statement of Facts.

7 Does this go to something else or are you trying
8 to back away from it?

9 MR. JACOBS: No. I'm not trying to back away from
10 it. In paragraph 51, to the extent it talks about
11 misleading things that happened after the first crash, those
12 are things that happened inside The Boeing Company and would
13 be relevant to Boeing Employee 2's state of mind.

14 THE COURT: Right. The crime that Boeing has
15 admitted to is the conspiracy to defraud, and it includes
16 what Mr. Fortner and Test Pilot 2 -- Test Pilot 1, Test
17 Pilot 2 said or didn't say, and all of the information in
18 the DPA Statement of Facts that would support the offense,
19 right?

20 And so, is it necessarily limited only to
21 Fortner's experience in the simulator and what he did and
22 didn't say, knew or didn't know at the time, or does it
23 include all of this, including the actions in paragraph 51,
24 or am I missing it? You think -- you look bewildered, so I
25 didn't make sense.

1 MR. JACOBS: I apologize, your Honor.

2 THE COURT: I guess what I'm wondering is, you're
3 limited to this Statement of Facts. And these -- this
4 Statement of Facts, however many paragraphs the DPA set out,
5 were all of the facts that the government and Boeing
6 believed would be necessary to support a finding of guilt to
7 the offense.

8 And so, it seems to me that what I would need to
9 evaluate, after all this evidence comes in, is what they say
10 and what these facts that you have stipulated to say and how
11 they impact the families.

12 And so it would include, then, wouldn't it, the
13 information in paragraph 51?

14 MR. JACOBS: Correct.

15 THE COURT: It seems to me that you're saying the
16 information in paragraph 51 doesn't apply here because it
17 happened so late in the game, and the real focus is on what
18 Fortner said or didn't say and Test Pilot 2 said and didn't
19 say.

20 What I am wondering is why wouldn't it all be
21 pertinent to the single charge, whenever it occurred?

22 MR. JACOBS: I believe it would be, your Honor. I
23 don't believe we're backing away. I don't believe my
24 question is intended to back away from paragraph 51.

25 THE COURT: Okay. Very good. Go ahead and ask

1 your question again.

2 MR. JACOBS: I just do believe it's relevant to
3 understand the steps that the Aircraft Evaluation Group took
4 after the first plane crash, particularly when this witness
5 is opining on what the AEG would have done had it known all
6 of the information about MCAS.

7 THE COURT: Right.

8 MR. JACOBS: And to the extent that there was a
9 piece of information that was missing, that was withheld
10 from the AEG because of Mr. Fortner and Boeing Employee 2 --

11 THE COURT: Right.

12 MR. JACOBS: -- after the first plane crash --

13 THE COURT: They did --

14 MR. JACOBS: -- the AEG now had that information.

15 THE COURT: Right.

16 MR. JACOBS: And still --

17 THE COURT: You're saying that you had plane crash
18 number 1, AEG knew about it, looked at it; it did nothing.
19 Didn't change any of the training rating from B to whatever,
20 up or down.

21 And then after crash number 2 it, likewise, didn't
22 immediately.

23 And so, your point is what?

24 MR. JACOBS: The point is --

25 THE COURT: Do I understand that right?

1 MR. JACOBS: Exactly, your Honor.

2 And to the extent there was one piece of
3 information that was missing from the AEG, which is the
4 piece of information that Boeing Employee 2 and Mr. Fortner
5 conspired to withhold from the AEG, they now had that after
6 the first crash, and the outcome for the AEG was still the
7 same.

8 They were continuing to evaluate MCAS further,
9 which is what the Statement of Facts lays out. There was
10 still an ongoing investigation. But at that point, that gap
11 about that one piece of information that is alleged to have
12 been withheld, that gap was filled, and their decision was
13 still to keep the planes flying without simulator training.

14 THE COURT: Okay.

15 MR. JACOBS: So I think it's -- the facts
16 themselves are contrary to the expert's opinion about what
17 the -- what the witness would know -- would opine should
18 have happened.

19 MR. CASSELL: If I could be heard briefly?
20 Paragraph 51, and that's post-Lion Air and pre-Ethiopian,
21 that says, "In connection with this investigation" -- that
22 is figuring out what happened -- "Boeing Employee 2 caused
23 Boeing to represent in a presentation to the FAA AEG that,
24 during the training evaluation process, Boeing and the FAA
25 AEG had discussed and agreed on the removal of MCAS from the

1 737 MAX, FSB report and associated materials.

2 "This representation was misleading because Boeing
3 Employee 2 had failed to disclose the shocker alert chat
4 communication and the fact that the FAA AEG was deprived of
5 relevant information about the MCAS."

6 So when he says there was only one piece of
7 information that was missing and now the world is fine
8 post-Indonesian crash, that is backing away from what their
9 paragraph 51 says. So I object to the premise of that
10 question.

11 THE COURT: Okay. I think I understand the facts.

12 So I'm going to allow you to ask that question, to
13 the extent it affects the witness's opinion, and, it either
14 does or it doesn't. And so, I will look at the answer to
15 this question with what I think -- what I think is a full
16 understanding of the facts.

17 So go ahead and ask it.

18 BY MR. JACOBS:

19 Q. So just going back to your opinion that, if the
20 AEG had the complete dataset about MCAS, that it would have
21 required full-flight simulator training, that actually
22 didn't play out after the first plane crash, correct?

23 A. That's correct.

24 Q. Right.

25 After the first plane crash, not only did the AEG

1 know at that point that MCAS had been expanded to low speed,
2 but they also learned from the Lion Air crash that MCAS
3 could ratchet and push the nose of the plane all the way
4 down, and they also learned that the AOA vane, that one AOA
5 vane that fit into MCAS, they had, at this point, the
6 complete dataset, right?

7 MR. CASSELL: Objection, your Honor. The
8 "complete dataset," I assume, would have included -- would
9 have included disclosure of the "shocker alert"
10 communication and the fact that Boeing had previously
11 deprived it of information?

12 They are backing away from what they told the
13 world in paragraph 51; I object.

14 THE COURT: Okay. Overruled.

15 With that explanation, you can answer.

16 THE WITNESS: Okay.

17 Would you please restate the question, sir?

18 THE COURT: Well, do you think they had a full set
19 of facts at that point is what Mr. Cassell is adding to the
20 question?

21 The question is, after crash number 1, they knew
22 what was going on here. So whatever Fortner and his
23 colleague had withheld, you've got a crash, they now know
24 what was going on here, and they didn't act in the way you
25 think they should have acted at that point.

1 So what's your take on that?

2 THE WITNESS: My take on that is that with crash
3 investigations, they do not come up with a probable cause
4 within a week, month. Many cases, it's a year or two years
5 before they finally come out with their final report.

6 At that point, they probably had not even had an
7 interim report. They probably had, in accordance with ICAO
8 Annex 13, would have invited the NTSB, the manufacturer of
9 the aircraft, the engine manufacturer, to participate in an
10 investigation.

11 One of the first things they might have would be
12 the cockpit voice recorder, which would give them an
13 indication of what was happening. Very sophisticated. They
14 can tell by the sounds what is happening, what switches are
15 being thrown, which trims are moving and which direction
16 they're moving. That all takes times to digest.

17 The AEG has probably, at that point, had an
18 inkling of what the issue was, but they would not have made
19 a rush to judgment based on the preliminary information that
20 they had, and would probably have been sitting there, going,
21 we need a little bit more information before we can pass
22 judgment.

23 The AEG is not the one that makes the
24 determination of what happened. They depend on other parts
25 of the agency to feed them information. At that point, they

1 may have suspected that the information that they had
2 received was incomplete and would be trying to determine
3 what the complete information was.

4 At that point, they would begin to make a
5 formulated decision, but it's a government agency, and they
6 do not move quickly.

7 And when you have an accident, it takes time to do
8 that investigation and come up with probable cause, and --
9 within probably a few days or a month after an accident such
10 as that, probably they do not -- did not have enough
11 information to make a determination that they needed to
12 change anything in the FSB.

13 BY MR. JACOBS:

14 Q. So when they issued the aircraft -- the Emergency
15 Airworthiness Directive, that was just a couple of weeks
16 after the first plane crash, right?

17 A. Yes.

18 Q. And in the Emergency Airworthiness Directive, at
19 the time that they issued that report, the AEG knew that
20 there was a system on the plane called MCAS, and that it
21 could operate all the way down to low speed, right?

22 A. I believe they knew at that point, yes.

23 Q. Right.

24 So at that point, they had the one piece of
25 information that Mr. Fortner and Boeing Employee 2 had

1 withheld from them, correct?

2 A. Correct.

3 Q. And even with that one piece of information, they
4 still did not require full-flight simulator training,
5 correct?

6 MR. CASSELL: Objection, your Honor. That's
7 assuming facts not in evidence. He's assuming that the FAA
8 AEG, within three minutes, could have changed a
9 certification rule.

10 They need to lay the foundation that it was even
11 mechanically possible for the bureaucracy to make a reversal
12 of earlier decisions in the sort of time frame he's asking
13 questions about.

14 THE COURT: Overruled. I think he answered.

15 Did you answer "correct"? No?

16 What's your answer to that question?

17 THE WITNESS: Okay. Would you restate the
18 question again, please.

19 BY MR. JACOBS:

20 Q. Sure.

21 So, at the time that the AEG published the
22 Emergency Airworthiness Directive, they knew about MCAS,
23 right?

24 A. They knew about MCAS, yes, sir.

25 Q. And they knew that MCAS had been expanded to

1 operate at low speed, correct?

2 A. I believe so, yes. Probably, they did.

3 Q. And that's the information in the Statement of
4 Facts that Mr. Fortner and Boeing Employee 2 withheld from
5 the AEG, correct?

6 A. Correct.

7 Q. Even having that information, the AEG did not
8 require full-flight simulator training for the 737 MAX at
9 that point in time, correct?

10 A. Correct.

11 Q. And, sir, just listening to you a moment ago
12 answer Judge O'Connor's questions, it sounds to me like
13 airplane crashes are incredibly complicated, complex things
14 to digest, right?

15 A. They are.

16 Q. Sounds like there's a lot to understand when
17 you're trying to understand what caused a plane to crash,
18 right?

19 A. Correct.

20 Q. You're familiar with a man named David Loffing?

21 A. David?

22 Q. Loffing. L-o-f-f-i-n-g?

23 A. I believe I've seen that name, sir.

24 Q. Do you know whether Mr. Loffing testified at the
25 trial of United States vs. Mark Fortner?

1 A. I do not recall.

2 Q. Have you read any transcripts from that trial
3 where Mr. Loffing testified that how MCAS was designed and
4 performed was one of the links, along with other -- many
5 others, that contributed to the accidents?

6 Have you read anything like that?

7 A. I don't believe so, no.

8 Q. You would agree with Mr. Loffing that in each of
9 these crashes, there were many links in the chain that led
10 to these crashes, right?

11 A. Yes.

12 Q. And in a plane crash of a complex commercial
13 airplane, in your experience, there are typically many links
14 in the chain that lead to a crash, right?

15 A. Yes.

16 Q. And what we're talking about in this case is not
17 an act of terrorism or someone putting a bomb on the plane
18 and it caused that plane to crash, right?

19 A. Right.

20 Q. There's no allegations that anyone engaged in any
21 sort of intentional act to cause these planes to crash,
22 correct?

23 A. My expert opinion is that by withholding the
24 information from the AEG and the cascading effect, it
25 ultimately led to two aircraft crashing with catastrophic --

1 THE COURT: I mean, isn't that the ultimate
2 question we have here, right?

3 MR. JACOBS: Of course.

4 THE COURT: If it's an intentional crime?

5 MR. JACOBS: Of course.

6 THE COURT: And then there's the contention of the
7 movants that it's a direct and proximate cause.

8 MR. JACOBS: Sure. And his opinion, though, is
9 based on the AEG having this complete set of data. The only
10 thing that was withheld from the AEG was one piece of
11 information. And the people who withheld that piece of
12 information didn't actually have the complete set of data --

13 THE COURT: Right.

14 MR. JACOBS: -- to share with the AEG.

15 THE COURT: Right. No, I'm with you. I
16 understand everything.

17 MR. JACOBS: Okay. Thank you, your Honor.

18 BY MR. JACOBS:

19 Q. Sir, I just want to ask you, are you aware of a
20 PowerPoint presentation that some employees from the FAA
21 created that said that Mr. Fortner was not responsible for
22 either of the plane crashes?

23 A. I am not.

24 Q. These are people who worked at the FAA where you
25 worked, correct, sir?

1 MR. CASSELL: Objection, your Honor. This seems
2 to be getting into issues that are entirely separate from
3 this particular hearing involving two particular plane
4 crashes.

5 I mean, is the government vouching for the
6 accuracy of that PowerPoint? The truth of that PowerPoint?

7 THE COURT: I don't think they are.

8 MR. CASSELL: So then I would object on that
9 ground as well. Are they saying this is reliable
10 information?

11 When, a few months ago, they were in this
12 courtroom saying --

13 THE COURT: Let me just stop you there.

14 I mean, you've not seen that document, right?

15 THE WITNESS: No, sir, I have not.

16 THE COURT: Okay. Very good.

17 BY MR. JACOBS:

18 Q. Are you aware that that PowerPoint said that the
19 737 MAX accidents were caused by a failure of the
20 engineering --

21 THE COURT: Well, he hasn't seen the document.

22 MR. JACOBS: I just want to make clear for the
23 record that he hasn't understood or seen those
24 representations. I appreciate where your Honor is coming
25 from. I'm happy to move on.

1 THE COURT: Right. Yeah, I think so. He hasn't
2 seen the document, so he can't affirm it or dispute it.

3 BY MR. JACOBS:

4 Q. Now, you said you read the Statement of Facts.
5 There's no allegation in the Statement of Facts in the DPA
6 that Mr. Fortner or Boeing Employee 2 were involved in the
7 engineering certification process for the MAX, right?

8 A. I believe so, correct.

9 Q. And, sir, you also talked about the crash reports
10 that were prepared by Indonesian and Ethiopian authorities.

11 In the Indonesian crash report, which is in
12 evidence as families' Exhibit 2, you are aware that the
13 report listed nine contributing factors that led to these
14 crashes, right?

15 A. I reviewed that, yes.

16 Q. And those are on page 215 of families' Exhibit 2;
17 is that right?

18 A. Yes.

19 Q. And you are aware that only one of those nine
20 contributing factors mentions pilot training and several
21 others focus on the design and certification of MCAS, right?

22 A. Yeah. Yes.

23 Q. And in the Ethiopian crash report, you are aware
24 that there are several findings and safety recommendations
25 which are on page -- I believe it's page 132 of that report,

1 correct? That's families' Exhibit 3.

2 A. On what page again, sir?

3 Q. Sure. Page 132.

4 A. Yes, sir, I have seen that.

5 Q. And you are aware that these findings and
6 recommendations mention pilot training, but also the faulty
7 engineering design of MCAS as contributing to the crash,
8 right?

9 A. Yes.

10 Q. And nothing in the Statement of Facts in the DPA
11 alleges that Mr. Fortner or Boeing Employee 2 knew anything
12 about how MCAS was designed by Boeing's engineers, right?

13 A. Correct.

14 Q. There's no information in the Statement of Facts
15 that Mr. Fortner or Boeing Employee 2 knew that MCAS relied
16 only on a single AOA vane, correct?

17 A. Right.

18 Q. There's no information or allegations in the
19 Statement of Facts that Mr. Fortner or Boeing Employee 2
20 withheld information about MCAS, relying only on one AOA
21 vane from the Aircraft Evaluation Group, correct?

22 A. Correct.

23 Q. And there's no information in the Statement of
24 Facts that Mr. Fortner or Boeing Employee 2 knew that MCAS
25 could ratchet to an unlimited degree, right?

1 A. Correct.

2 Q. There's no information in the Statement of Facts
3 that Mr. Fortner or Boeing Employee 2 withheld information
4 about MCAS being able to ratchet to an unlimited degree from
5 the AEG, right?

6 MR. CASSELL: Objection, your Honor. I think that
7 misstates the Statement of Facts. The shocker alert email
8 that we are all aware of talks about the MCAS running
9 rampant.

10 And so "running rampant" seems to me to very
11 easily encompass the sorts of things Mr. Jacob is suggesting
12 are not in the Statement of Facts.

13 Once again, I am very concerned that the
14 government is backing away from what they agreed to because
15 it's convenient for them in this hearing.

16 THE COURT: Okay. Overruled.

17 You can take into account that email that he
18 mentioned.

19 THE WITNESS: Okay.

20 Would you restate that, please?

21 BY MR. JACOBS:

22 Q. Let me ask you, sir. There is no information that
23 Mr. Fortner or Boeing Employee 2 had what you called this
24 complete set of data that would have impacted the AEG's
25 decision about pilot training, right?

1 A. Okay. And we are still referring to the
2 Indonesian accident report?

3 Q. No. I'm referring to what's in the Statement of
4 Facts.

5 A. Okay.

6 Q. There's nothing in the Statement of Facts that
7 alleges that Mr. Fortner or Boeing Employee 2 ever had what
8 we've talked about as the complete set of data that you say
9 that if the AEG had it, it would have impacted their
10 training decision, right?

11 A. Yes.

12 Q. They never had that complete set of data, right?

13 A. Mr. Fortner never had that?

14 Q. As it's laid out in the Statement of Facts,
15 there's no allegation or information that Mr. Fortner or
16 Boeing Employee 2, ever had a complete set of data, right?

17 A. Correct.

18 Q. And, sir, you testified that you are not familiar
19 with how MCAS was designed, right?

20 A. That is correct.

21 Q. You never worked with the AEG, right?

22 A. No, sir.

23 Q. You are not an expert in investigating the causes
24 of plane crashes, right?

25 A. I have been trained, and I have conducted and

1 participated in numerous aircraft accidents.

2 Q. Have you ever been qualified as an expert in
3 federal court for any purpose, sir?

4 A. No, sir.

5 Q. Have you ever been qualified to provide any sort
6 of expert opinion on the cause of a plane crash in federal
7 court?

8 A. No, sir.

9 Q. And your report offers no opinion as to the cause
10 of either crash, right?

11 A. I believe that I indicated that the -- one of the
12 causal factors was that the pilots were not properly
13 trained. They did not get complete training because there
14 was information missing.

15 Q. I think you've also testified, sir, that plane
16 crashes are complicated and often there are a number of
17 causes that goes into what causes any particular plane
18 crash, right?

19 A. Yes, sir.

20 Q. And you talked about your experience investigating
21 plane crashes and reading plane crash reports.

22 In your experience, there is often a number of
23 causes that go into why a commercial airplane crashes,
24 correct, sir?

25 A. It's usually a domino-type of effect, yes.

1 Q. And nowhere in your report does it say that anyone
2 at Boeing did anything intentional that they could
3 reasonably foresee would cause two planes to crash, right?

4 A. Right.

5 MR. JACOBS: Thank you, your Honor.

6 Actually, may I have one moment, your Honor?
7 While I'm here, your Honor, just renew our objection to the
8 witness being able to provide the opinion that the AEG would
9 have known something.

10 THE COURT: Yeah, let's just hold all of that.
11 Let's get the evidence in. I will carry that objection
12 through the whole hearing.

13 MR. JACOBS: Thank you, sir.

14 CROSS-EXAMINATION

15 BY MR. HANEY:

16 Q. Mr. Keyes, good afternoon.

17 A. Good afternoon, sir.

18 Q. I think you testified you've been a certificated
19 pilot for about 50 years; is that right?

20 A. Yes, sir.

21 Q. But you're not qualified in the 737 MAX or any
22 other 737 model, right?

23 A. That is correct.

24 Q. You've never flown the Boeing 737 as a commercial
25 pilot, correct?

1 A. Correct.

2 Q. You've never completed pilot training on the 737
3 MAX?

4 A. That is correct.

5 Q. You've never completed difference training between
6 737 NG and the 737 MAX?

7 A. That is correct.

8 Q. You offer opinions regarding the 737 MAX aircraft
9 flight manual and checklist; is that right?

10 A. Yes, sir.

11 Q. But you're not an expert on that manual or those
12 checklists, correct?

13 A. Not an expert, no, sir.

14 Q. You described on direct examination there is a
15 team at the FAA that reviews those manuals and checklists,
16 right?

17 A. Yes.

18 Q. And you've never been a part of that team in your
19 duties at the FAA, correct?

20 A. No.

21 Q. Now, sir, you're not an expert on memory items and
22 procedures for the runaway stabilizer checklist on the 737,
23 correct?

24 A. Correct.

25 Q. And you've never trained on the runaway stabilizer

1 procedure in a 737, either simulator or aircraft, right?

2 A. Correct.

3 Q. Sir, you also offer opinions on what the FAA and
4 the Flight Standardization Board would have done if it had
5 more data about MCAS; is that fair?

6 A. Yes, sir.

7 Q. And Mr. Keyes, you are a retired FAA employee who
8 still works in a contract capacity at the FAA Academy,
9 right?

10 A. I do.

11 Q. Would you agree the FAA is a large organization
12 with many different parts?

13 A. Yes, sir.

14 Q. And those many different parts fulfill many
15 different functions; is that fair?

16 A. Yes, sir.

17 Q. In your report, you talk about the FAA AEG, right?

18 A. Yes, sir.

19 Q. And that's the group at the FAA responsible for
20 determining differences training, among other things? Fair?

21 A. Yes, sir.

22 Q. But during your time at the FAA, you never
23 actually worked for the AEG, right?

24 A. I never did, no, sir.

25 Q. You also talk about the Flight Standardization

1 Board, correct?

2 A. Yes, sir.

3 Q. And that's the board responsible for determining
4 requirements for pilot type ratings, developing minimum
5 training requirements and ensuring initial flight crew
6 member competency in accordance with published guidelines,
7 correct?

8 A. Correct.

9 Q. During your time at the FAA, Mr. Keyes, you never
10 served on a Flight Standardization Board, correct?

11 A. No, I did not.

12 Q. You also talk about the Aircraft Certification
13 Office in your report, right?

14 A. Yes, sir.

15 Q. And that's the group at the FAA that performs
16 aircraft certification duties, right?

17 A. Correct.

18 Q. During your time at the FAA, you never served or
19 worked for an Aircraft Certification Office, correct?

20 A. I did not.

21 Q. You'd agree that the AEG is different and has
22 different responsibilities than the Aircraft Certification
23 Office, correct?

24 A. Correct.

25 Q. For example, the AEG cannot issue a type

1 certificate, correct?

2 A. That is correct.

3 Q. And the Aircraft Certification Office cannot
4 determine pilot differences requirements, right?

5 A. Correct.

6 Q. Mr. Keyes, you also offer opinions on what foreign
7 operators depend on when it comes to the FAA's Flight
8 Standardization Board report, correct?

9 A. Correct.

10 Q. Sir, you've never worked for a foreign airline
11 carrier, right?

12 A. That is correct.

13 Q. And you've never been involved in designing
14 training for a foreign airline carrier?

15 A. No, sir.

16 Q. You've never worked for a foreign aircraft
17 regulator, right?

18 A. No, sir.

19 Q. You've never been involved in making training
20 decisions for a foreign aircraft regulator, correct?

21 A. No.

22 Q. You've never sat in on technical familiarization
23 meetings between Boeing, the FAA, and foreign regulators,
24 right?

25 A. Yes.

1 Q. And you're not aware of what type of information
2 Boeing provides to foreign regulators during those meetings,
3 right?

4 A. Correct.

5 Q. For example, you couldn't say, one way or the
6 other, whether Boeing provided information about MCAS to
7 foreign regulators during technical familiarization meetings
8 during the certification of the MAX, right?

9 A. Correct.

10 MR. CASSELL: Objection, your Honor. At this
11 point Boeing is starting to back away from its initial
12 admission Statement of Facts, which was that it never
13 disclosed the MCAS information to anyone, as I read the
14 Statement of Facts Boeing presented.

15 THE COURT: Is that true as to anyone, as opposed
16 to the FAA and the AEG?

17 MR. HANEY: It was to the FAA AEG.

18 MR. CASSELL: Your Honor, it's a Statement of
19 Facts.

20 MR. HATCH: The DPA and the Statement of Facts
21 actually make clear that Boeing disclosed information about
22 MCAS's expanded operational scope to other portions of the
23 FAA.

24 THE COURT: Right. No, I understand the other
25 portions argument. I've sat through the trial on that.

1 But in terms of the Statement of Facts, I'm just
2 curious about the Statement of Facts. Is the Statement of
3 Facts limited to disclosure to AEG?

4 MR. HANEY: The Statement of Facts is focused on
5 Boeing Employee 1 and Boeing Employee 2's withholding of
6 information from the FAA AEG to be sure, your Honor.

7 THE COURT: Right.

8 And so my question to you, because the objection
9 is that it's more broad than that. And you disagree with
10 that?

11 MR. HANEY: I will tie this up, your Honor --

12 THE COURT: Go ahead.

13 MR. HANEY: -- when we get to the questions about
14 the Lion Air report.

15 BY MR. HANEY:

16 Q. And Mr. Keyes, just to be clear, have you ever
17 been qualified for a -- by a court as an expert in anything?

18 A. No, sir.

19 Q. Your opinions in this case are based on your
20 education and experience, correct?

21 A. And my review of the documents presented, yes,
22 sir.

23 Q. And your review of the documents presented.

24 But you didn't -- haven't applied any scientific
25 methodology, right?

1 A. Correct.

2 Q. For example, with respect to your training level
3 determination opinion, your opinions are based on your
4 review of the materials and your understanding of what the
5 Flight Standardization Board actually did, correct?

6 A. Correct.

7 Q. You haven't done any analysis of your own to try
8 to replicate the Flight Standardization Board's decision,
9 right?

10 A. Correct.

11 Q. You testified on direct about the AEG, they use
12 formulas to help them come up with their Flight
13 Standardization Board determinations, right?

14 A. Yes, sir.

15 Q. And you are not familiar with those formulas,
16 correct?

17 A. No.

18 Q. And you couldn't use those formulas to make a
19 determination about what the FSB would have done on your
20 own, right?

21 A. Probably not.

22 Q. And one of the reasons for that in this case is
23 that you testified that machinations of MCAS is not your
24 bailiwick, and you just have a rudimentary understanding of
25 MCAS, correct?

1 A. Correct.

2 Q. And in order to do the work that the AEG and the
3 FSB did, you'd need to understand how MCAS worked, correct?

4 A. Correct.

5 Q. And you just don't have that expertise, right?

6 A. Correct.

7 Q. I want to turn to another opinion you submitted in
8 the case. And you say your --

9 You write in your opinion that, "There were two
10 fatal 737 MAX accidents, Lion Air and Ethiopian Air, which
11 were caused by faulty MCAS and the crews' lack of
12 knowledge/training on how to properly deal with the
13 emergency"; is that right?

14 A. Yes, sir.

15 Q. And so, even on the face of your opinion, you
16 identify two potential causes of the accident: Faulty MCAS,
17 one, and the crews' lack of knowledge and training for how
18 to properly deal with the emergency, two, correct?

19 A. Yes, sir.

20 Q. I'm not going to rehash the different findings
21 that the Indonesian authorities made in their accident
22 report or the Ethiopian authorities made in their interim
23 report, but would you agree with me that you haven't done
24 any analysis of those findings or those contributing factors
25 to determine which of those multiple contributing factors

1 and findings are more or less important than any other one?

2 A. I have not.

3 Q. Another of your opinions, sir, deals with foreign
4 operators. That your opinion is that all operators,
5 domestic and foreign, of the 737 MAX depend on the FAA for
6 appropriate and accurate information regarding aircraft that
7 they approve and the training they recommend, right?

8 A. Yes, sir.

9 Q. You'd degree, however, that foreign governments,
10 foreign regulators, actually set the training requirements
11 for their carriers?

12 A. They do.

13 Q. For example, Lion Air's requirements are set by
14 Indonesian authorities, and Ethiopian Airline's requirements
15 are set by the Ethiopian authorities, right?

16 A. Yes.

17 Q. In fact, in your report you concede that foreign
18 operators of Boeing 737 MAX aircraft are not required to
19 follow the recommendations of the Flight Standardization
20 Board Report, right?

21 A. Correct.

22 Q. And you said on direct examination that certain
23 countries with less resources would be more likely to follow
24 the FAA Flight Standardization Board Report, correct?

25 A. Correct.

1 Q. But you haven't done any analysis to determine
2 which countries actually did and did not follow the Flight
3 Standardization Board Report, right?

4 A. Correct.

5 Q. You would agree that it's at least possible that
6 the Indonesian authorities or the Ethiopian authorities
7 might have set different training requirements than the FAA?

8 A. Yes.

9 Q. Foreign regulators don't always just follow the
10 FAA, right?

11 A. No.

12 Q. That's correct, they don't always follow the FAA?

13 A. That's correct.

14 Q. And foreign regulators don't always just accept
15 the FAA's determinations, correct?

16 A. Correct.

17 Q. In fact, Mr. Cassell showed you Exhibit 5 and
18 Exhibit 6, the Boeing emails, and those emails actually show
19 that foreign regulators can make their own decisions, right?

20 A. That is correct.

21 Q. And you are aware that foreign regulators are
22 permitted to ask their own questions to Boeing for their own
23 purposes, right?

24 A. Correct.

25 Q. In fact, if you look at Exhibit 2, the Lion Air

1 report, on page 156 -- I will give you a minute.

2 A. Page again, sir?

3 Q. 156. It's Section 1.17.8.

4 MR. CASSELL: Which one is this?

5 MR. HANEY: Exhibit 2, Lion Air report.

6 BY MR. HANEY:

7 Q. You see there's a reference to a type certificate
8 validation meeting conducted by the Indonesian DGCA for the
9 Boeing 737-8 MAX? Do you see that?

10 A. Yes, sir.

11 Q. And it looks like it was a nine-day meeting held
12 at the Boeing facility in Renton, Seattle, Washington,
13 correct?

14 A. Yes, sir.

15 Q. And if you look down to the fourth paragraph, it
16 actually says, "The Maneuvering Characteristic Augmentation
17 System, MCAS, was discussed during this system
18 familiarization of Boeing 737-8 on the MAX." Do you see
19 that?

20 A. No, I do not.

21 Q. It's the fourth paragraph down. The paragraph
22 starts, "The agenda of the TC validation where system
23 familiarization is presented by Boeing and certification
24 discussion based on" --

25 A. Oh, okay. Yes, I see that.

1 Q. And it says the MCAS system was discussed during
2 system familiarization on the MAX, right?

3 A. Yes, sir.

4 Q. All right. Let's move on to another one of your
5 opinions about Boeing's omission of information about MCAS
6 from the AEG.

7 It's your opinion that the Level B determination
8 that the AEG and the Flight Standardization Board made back
9 in 2016, 2017 was erroneous, correct?

10 A. Correct.

11 Q. And that, if Boeing Employee 1 and Boeing Employee
12 2 had not omitted information about MCAS from the AEG, the
13 Flight Standardization Board would have made a different
14 training level determination, correct?

15 A. Probably, yes.

16 Q. Now, sir, again, you know, I will be brief on
17 this, but when you say complete dataset was withheld from
18 the AEG in your opinion, you understand that the only thing
19 that Boeing Employee 1 and Boeing Employee 2 withheld from
20 the AEG, according to the Statement of Facts, is MCAS's
21 expanded operational scope, the fact that MCAS could
22 function at lower speeds, correct?

23 A. Correct.

24 Q. So you agree the FAA AEG was not aware of
25 low-speed MCAS in 2016, right?

1 A. Correct.

2 Q. And it's your opinion that if Boeing's technical
3 pilots, Employee 1 and Employee 2, had disclosed low-speed
4 MCAS to the AEG in 2016, then the Flight Standardization
5 Board would have required that flight crews have simulator
6 training, right?

7 A. Correct.

8 Q. Let's talk for a minute about what training was
9 required after the AEG became aware of low-speed MCAS.

10 You stated you agree with the Statement of Facts,
11 right?

12 You testified earlier you agree with the Statement
13 of Facts. You don't dispute it, correct?

14 A. Oh, yes, sir.

15 Q. Okay. And from paragraph 49 in the Statement of
16 Facts, "Following the Lion Air crash, the FAA AEG learned
17 that MCAS activated during the flight and may have played a
18 role in the crash. The FAA AEG also learned for the first
19 time about MCAS's expanded operational scope," correct?

20 A. Correct.

21 Q. You'd agree it became well known after the Lion
22 Air crash that MCAS could operate at both high and low
23 speeds, correct?

24 MR. CASSELL: Objection, your Honor.

25 Could we have some clarification?

1 Obviously, it became well known by 2022. What
2 time frame is the -- is he referencing to?

3 BY MR. HANEY:

4 Q. Are you aware, sir, that --

5 I will rephrase that question.

6 Would you agree that, prior to the Ethiopian
7 Airlines crash in March of 2019, it was well known that MCAS
8 could operate at both high speeds and low speeds?

9 A. I would say probably.

10 Q. You know, I'm sure you've seen in the press,
11 reporting following the Lion Air crash regarding MCAS,
12 right?

13 A. I would believe the press would be suspect.

14 Q. Okay, sir.

15 You are aware that, following the Lion Air
16 accident but prior to the Ethiopian Airlines accident,
17 Boeing issued a flight crew operations manual bulletin
18 related to the Lion Air accident, correct?

19 A. Correct.

20 Q. You are welcome to look at it, but it's page 288
21 of the Lion Air report, Exhibit 2, if you need to.

22 You are aware that that bulletin went to all 737
23 MAX operators, right?

24 A. It was distributed in that manner.

25 Q. And you would agree that the Boeing flight crew

1 operator's manual bulletin pointed to existing procedures,
2 the runaway stabilizer procedure, to address the condition
3 experienced on the Lion Air accident flight, right?

4 A. Correct.

5 Q. You are also aware that the FAA published an
6 emergency airworthiness directive in November 2018, again
7 before the Ethiopian Airlines crash, right?

8 A. Yes.

9 Q. And you are aware that that airworthiness
10 directive also goes to all 737 MAX operators, correct?

11 A. Correct.

12 Q. And you would agree that the FAA's airworthiness
13 director pointed to -- also pointed to existing procedures,
14 the runaway stabilizer procedure, to address the condition
15 experienced on the Lion Air flight, right?

16 A. Correct.

17 Q. You are aware that on November 10th, 2018, Boeing
18 published a multi-operator message that described MCAS and
19 the fact that it could operate at speeds approaching stalls,
20 correct?

21 A. Correct.

22 Q. And that's at page 290 of the Lion Air report,
23 Exhibit 2 for the record.

24 As an experienced aviation professional, when
25 someone says "speeds approaching stalls," that's low speeds,

1 right?

2 A. For the most part, yes.

3 Q. You would agree that, prior to the Ethiopian
4 Airlines crash, neither the FAA nor any other international
5 regulator required simulator training?

6 A. That's correct.

7 Q. In fact, prior to the Ethiopian Airlines crash
8 neither the FAA or any other international regulator
9 required any additional training at all beyond just updating
10 the manual to reference existing procedures, correct?

11 A. Correct.

12 Q. And that procedure, the runaway stabilizer
13 procedure, that's one that all pilots are trained on,
14 correct?

15 A. Correct.

16 Q. And that's a procedure that all pilots have always
17 been trained on, right?

18 A. That is a common training item.

19 Q. So, Mr. Keyes, to sum up, you'd agree that we
20 don't know what the FAA AEG would have done about training
21 in 2016 had they known about low-speed MCAS, correct?

22 A. I believe that they probably would have made a
23 different determination had they had all of the information
24 about the expansion of MCAS to a lower speed.

25 Q. And we will get to this, but to use your words,

1 "they probably would have."

2 It's conceivable they wouldn't have, correct?

3 A. Conceivable they would have, yes.

4 Q. Conceivable they would not have, correct?

5 A. No. I'm saying it was conceivable that, had they
6 had the full information, that they would have made a
7 determination to go to a higher level of training as opposed
8 to Level B.

9 Q. I'm with you, sir.

10 And so it's conceivable they would have made that
11 higher determination, and it's conceivable they would not
12 have; we just don't know, correct?

13 A. Correct.

14 Q. We do know what the AEG did in 2018, after the
15 Lion Air crash, but before the Ethiopian Airlines crash,
16 with respect to requiring simulators for MCAS, correct?

17 A. I don't feel that between the Lion Air and the
18 Ethiopian crash, I do not believe that there was any
19 indication that the AEG made a requirement for simulator
20 training.

21 Q. Right. So after the Lion Air crash, but prior to
22 Ethiopian Airlines crash, after the FAA AEG was aware of
23 low-speed MCAS, they never determined to require simulator
24 training on MCAS for the MAX, correct?

25 A. Correct.

1 Q. Sir, you'd agree that not all differences between
2 aircraft need to be trained, right?

3 A. No.

4 Q. You do agree with that or you do not agree with
5 that?

6 A. I do not agree with that.

7 Q. Okay. So your -- I'm going to look to page 4 of
8 your report. You say -- so let me get your testimony.

9 Your testimony is that all differences levels, all
10 differences training between aircraft need to be trained; is
11 that right?

12 A. Correct.

13 Q. All right. Are you aware that your report says,
14 if no differences exist or if differences exist but do not
15 affect knowledge, skills, ability or flight safety, then
16 differences levels are not assigned, nor are they applicable
17 to pilot training and qualification?

18 A. Okay. Yes, sir.

19 Q. So does that help you understand that not all
20 differences need to be trained, sir?

21 A. Yes. If it's a minor item, that the coffee maker
22 now has a new temperature limit on it, the crew would
23 probably be made aware of that during a training. It would
24 not be a very large-emphasis item.

25 If that were the case, they would probably just

1 get a notice through the notification systems that the air
2 carrier has and they would go on.

3 If it had anything to do with a crew member in the
4 cockpit that would affect his decision-making or how he
5 operated the aircraft, you would want to address that in
6 differences training.

7 Q. Sir -- and my specific question is a little more
8 simple, I hope -- it's that not all differences need
9 training, right?

10 A. Correct.

11 Q. And there are also types of differences training
12 that don't require simulator training, right?

13 That's level A, Level B, Level C, right?

14 A. Correct.

15 Q. Would you agree it's possible that the FAA AEG
16 might not have required simulator training in 2016, 2017,
17 even if they had the information about MCAS's expanded
18 operational scope that Boeing Employee 1 and Boeing Employee
19 2 withheld?

20 A. I would not agree with that.

21 Q. It's not possible under your --

22 A. I don't see how they could have done that.

23 Q. Okay. And that's so, even though you, yourself,
24 cannot do that analysis, because you're not familiar with
25 the formulas, and you're not familiar with MCAS, right?

1 A. Correct.

2 Q. It's also your opinion that, had the accident
3 flight crews had simulator training, they would have been
4 able to respond to the conditions on the accident flight,
5 right?

6 A. Correct.

7 Q. But you don't dispute that, prior to the accident,
8 flight crews on the 737 MAX were already trained in the
9 simulator on runaway stabilizer procedures, right?

10 A. Correct.

11 Q. And as you sit here today, you can't say with any
12 certainty what additional training would have been required
13 to prevent the accidents, right?

14 A. I believe that Level D or better would have been a
15 contributing factor to preventing those accidents.

16 Q. Can you say, for example, sir, how any additional
17 training would have been different than the existing runaway
18 stabilizer training?

19 A. The pilots had gotten information through those
20 ADs in a written form. They would read them. Had they had
21 the opportunity to get into a simulator, they would have
22 been able to see what the indications are. They would have
23 had the indications on the screen.

24 They would have had indications perhaps on the
25 visual. If they were at altitude, probably not so much as

1 at a lower altitude, they would have had visual cues.

2 They would have had experience touching and
3 pulling back and experiencing the load factors. They would
4 have heard the ratcheting, if you will, of the nose down.

5 They would have had the opportunity to apply
6 memory items because this was a situation in which they did
7 not have the luxury of pulling a checklist out and going to
8 it.

9 It would have been a memory item-type thing in
10 which they would -- in a simulator they would have had the
11 opportunity to apply that knowledge.

12 As I mentioned this morning, a sim operator, if
13 there was something that a pilot did wrong, out of sequence
14 they can stop the simulator, and the pilot -- they can
15 discuss it, they can reposition and go back and start over
16 again and afford the pilot the opportunity to experience
17 that, apply the knowledge.

18 And that way, he's learned it by reading it. He's
19 learned it by probably looking at maybe some training aides
20 in the classroom. He now has the simulator, which can
21 reinforce his training through sight, sound, and feel.

22 Therefore, he's going to be a much better trained
23 pilot, and he is going to have a reasonably good chance of
24 actively or correctly responding to a given emergency within
25 a given system.

1 Q. Mr. Keyes, in your answer you reference the AD,
2 the Airworthiness Directive, correct, that pilots read about
3 the indications?

4 A. Yeah.

5 Q. So that all happened after the Lion Air crash,
6 correct?

7 A. I believe so, yes.

8 Q. So back in 2016, isn't it possible that, even if
9 the AEG had required simulator training on MCAS, it's
10 possible the simulator training would not have been
11 meaningfully different than the runaway stabilizer existing
12 training, right?

13 A. It would depend on how the individual operators
14 have incorporated the information from the FSB into their
15 training programs.

16 Q. It would depend on each individual operator and
17 how they did that, right?

18 A. Especially the foreign operators.

19 Q. And you are not an expert on how foreign operators
20 incorporate recommendations into their training, right?

21 A. No, I'm not.

22 Q. So, Mr. Keyes -- and I'm wrapping up here -- but
23 it's your opinion that Boeing Employee 1 and Boeing Employee
24 2's omission of information about MCAS from the AEG and the
25 Flight Standardization Board was an actual cause of the Lion

1 Air and Ethiopian Airlines crash, correct?

2 A. I believe it was a contributing factor.

3 Q. Well, sir, is it your opinion that it could have
4 been a factor, or that it was the actual cause of the
5 accident?

6 A. I believe --

7 MR. CASSELL: Objection, your Honor. That's --
8 that's a confusing question. I'm not sure even I understand
9 it.

10 Can you clarify it?

11 BY MR. HANEY:

12 Q. I believe I asked -- the question was, if we could
13 clarify his opinion whether what I understand has been --
14 was that with the omission of information about MCAS by
15 Employee 1 and Employee 2 was an actual cause of the Lion
16 Air and Ethiopian Airlines accidents; yes or no?

17 A. Yes.

18 Q. Okay. In order for that to be the case, sir, we
19 would have to know that, if the Flight Standardization Board
20 hadn't withheld information about MCAS's operational speed
21 expansion, the FSB would have required differences training
22 on MCAS at the time of the certification, right?

23 A. Correct.

24 Q. We would have had to know that the Flight
25 Standardization Board would have required Level D simulator

1 training on MCAS and not a lower level, correct?

2 A. Correct.

3 Q. We would have to know that foreign regulators
4 would have followed the FAA Flight Standardization Board,
5 even though they're not required to, correct?

6 A. Correct.

7 Q. And we would have to know that, even if simulator
8 training had been required by those foreign regulators, it
9 would have included the accident scenarios, correct?

10 A. Correct.

11 Q. And we'd have to know that the required simulator
12 training would have led the pilots to respond appropriately,
13 correct?

14 A. Correct.

15 Q. Mr. Keyes, we've talked a lot about what your
16 opinion says, but I want to briefly turn now to what is not
17 in your opinion.

18 I don't see anywhere in your opinion an analysis
19 of whether Boeing Employee 1 and Boeing Employee 2 could
20 have reasonably foreseen that an omission of information
21 regarding MCAS's expanded operational scope, the speed,
22 could have caused the accident, right?

23 A. Can you restate that, please?

24 Q. There's nothing in your opinion about whether
25 Boeing Employee 1 and Boeing Employee 2 could have

1 reasonably foreseen that an omission of information
2 regarding MCAS's expanded operational scope, the low speed,
3 could have caused the accident, right?

4 A. That did not enter in the analysis.

5 Q. Okay. No analysis.

6 And you didn't testify to that on direct
7 examination, correct?

8 A. I did not. I had no knowledge at that time --

9 THE COURT: Hold on a second. Hold on a second.

10 Ask your next question.

11 MR. HANEY: Yeah.

12 BY MR. HANEY:

13 Q. Just confirming. You didn't testify to that on
14 direct?

15 THE COURT: He did. He said no, and he was
16 explaining.

17 BY MR. HANEY:

18 Q. Okay. All right. And my final question, you've
19 never been qualified to act as an expert on the proximate
20 cause of an aircraft crash; correct?

21 A. I have contributed to many crashes, but I have not
22 been a party to the final determination.

23 Q. And no court has ever qualified you as an expert
24 on the proximate cause of a plane crash?

25 A. Correct.

1 MR. HANEY: Thank you, sir.

2 THE COURT: Do you know how long you have? I have
3 to break at 3:00 for a little bit.

4 MR. CASSELL: I think we're all planning to stay
5 to find out what happened to the raccoon, your Honor.

6 THE COURT: In addition to that, I have, beyond
7 the raccoons, something else that's going to take a little
8 bit of time. So we will stay late tonight.

9 So anyway, you've got from now until 3:00, all of
10 you do. If you want to end it before 3:00, let's get it
11 done. If you can't, then you're going to have to come back
12 at 4:00-ish.

13 MR. CASSELL: Right. Let me -- let me see how it
14 goes. I think we discussed earlier that I might have a
15 little bit of latitude now on redirect to discuss --

16 THE COURT: Yes.

17 REDIRECT EXAMINATION

18 BY MR. CASSELL:

19 Q. Sir, I think there's been some questions about
20 your background that have been raised. It may be useful to
21 go through some of those aspects of your background.

22 A. Okay.

23 Q. You mentioned -- oh, I assume you went to college.
24 And what was your degree in?

25 A. My actual science was in aeronautical science, and

1 my MBA was business.

2 Q. And then do you have any professional certificates
3 connected with aviation?

4 A. I hold an Airline Transport Pilot Certificate with
5 five separate ratings, and I hold a flight instructor
6 certificate.

7 Q. What are the type ratings that you have?

8 A. I have two Hawker type ratings, two King Air type
9 ratings, and I have a Citation by under-type rating.

10 Q. And how much flight time do you have at this point
11 in your career?

12 A. Somewhere --

13 Q. Approximately?

14 A. -- somewhere in excess of 8500 hours.

15 Q. And if I understand correctly, after graduating
16 from college and so forth, you became a flight instructor, a
17 charter pilot, and a corporate pilot?

18 A. Correct.

19 Q. Could you briefly describe what that involved?

20 MR. JACOBS: Your Honor, we'd stipulate to
21 everything that's in the professional qualifications part of
22 the expert report. If that's what we're going to go over,
23 we will just stipulate to all that.

24 MR. CASSELL: All right.

25 THE COURT: It's up to Mr. Cassell.

1 BY MR. CASSELL:

2 Q. Maybe I should try to focus in just a little bit.

3 Was there anything in being a flight instructor, a
4 charter pilot, or a corporate pilot that helped you in
5 reaching some of the conclusions you've offered today?

6 A. Just general education and my experiences at -- I
7 was a part of the certification team that certificated
8 Simuflite as the first 142 training center.

9 It involved the approval of the curriculum,
10 integrating simulators into the training programs, and
11 approval of the simulator checklist.

12 Q. All right. I think I will get to that in a
13 minute. I'm just looking at your CV. It indicates that
14 from 1987 to 2000 you were an aviation safety inspector for
15 the FAA?

16 A. Correct.

17 Q. Could you tell the Court a little bit about what
18 being an aviation inspector for the FAA involved?

19 A. It involved certification of airman, certification
20 of air carriers, air agencies, operators. It involved
21 surveillance of those operators, plus agricultural
22 operations, pilot schools, things of that nature.

23 We participated with the NTSB in accident
24 investigation. If the NTSB made a determination that they
25 do not have the resources to go out on an accident, the

1 accident would be delegated to the FAA.

2 We certificated airman, and we provided
3 surveillance. Just kind of generally all of that in the
4 general aviation population, and in the air carrier world,
5 which would, at that point, be FAR Part 135, which basically
6 is your air taxi and commercial operators.

7 Q. I wonder if you could go back. You've said that
8 you were involved in aircraft accident investigations.

9 Could you explain a little bit more the kinds of
10 things you handled in connection with that?

11 A. The one FAA inspector goes out on an accident. In
12 many cases, the FAA inspector is the first one on the scene.

13 It takes a while for the NTSB to get their people
14 lined up and get them moved to the accident site. And as a
15 consequence, the FAA is usually the first one there and
16 assumes control of an accident site until the NTSB gets
17 there.

18 In some cases, the NTSB may give directions to the
19 FAA on what they want done or not done until they get there,
20 preserving the wreckage, looking for certain documents, make
21 sure that you get the radar reports, things of that nature.

22 Also, the FAA had certain responsibilities for
23 things that we had to check and report on. We had a
24 standard form that we had to fill out regarding those
25 accidents.

1 Q. And then, if I understand correctly, from 2000 to
2 2002, you were a manager of the Training and Standardization
3 Branch, FAA Flight Inspection program?

4 A. That is correct.

5 Q. Could you explain just briefly what that involved?

6 A. The flight inspection branch for the FAA is the
7 organization that has responsibility for approving and
8 surveilling navigation aides for en-route navigation and
9 approaches.

10 They do it all over the world. For the most part,
11 we get invited -- we are invited by many countries to come
12 in and do the certification and surveillance and
13 recertification of their instrument approach systems, their
14 en-route systems. We check the communications.

15 But also in the United States, at the time I was
16 there, we had 32 aircraft. There was Challengers, Hawkers,
17 Lear Jets, and King Airs.

18 We had 55 pilots and about the same number of
19 technicians that were sitting in the back and did the real
20 technical part of monitoring those.

21 My job was to -- also as a result of an accident
22 in Front Royal, Virginia, the FAA and being certificated as
23 a 135 operator and was required to operate in accordance
24 with FAR 135.

25 And as such, they had to have specific training.

1 The pilots had to have specific training, periodic checking.
2 My job was the manager of the training and qualification
3 branch.

4 And it was my job and the people in my unit to
5 conduct the appropriate tests, proficiency tests for the
6 pilots, or certification, if they were a new pilot and had
7 to get certificated in those aircraft.

8 Also, I was responsible for overseeing the
9 contracts with Simuflight flight safety for recurrent
10 training and qualification, not only as a pilot for that,
11 but into the Flight Inspection Program qualifications.

12 Q. And then from 2002 to 2005, you were the manager
13 of Oklahoma FAA Flight Standards District Office.

14 Could you briefly tell us what that involved?

15 A. My district was the State of Oklahoma. We had
16 responsibility for all aviation activity within the State of
17 Oklahoma, the certification of operators, surveillance of
18 those operators, accident and incident specification,
19 violation investigations, complaint investigations, accident
20 investigations.

21 Q. Let me stop you right there. That might be of
22 significance.

23 Can you tell us what you did in connection with
24 accident investigations and accident reports as a manager
25 there?

1 A. As the manager there, I ensured that the
2 inspectors that went out on the accidents completed all the
3 appropriate documentation that was required, and I reviewed
4 all of the accident reports that the FAA inspectors produced
5 before I forwarded those to the regional office.

6 Q. Were you required to approve those accident
7 reports?

8 A. I had to sign off on each report.

9 Q. And then from 2005 to 2011, I understand you were
10 the manager of the FAA, National Flight Program Oversight
11 Office.

12 Could you briefly tell us what that involved?

13 A. The FAA was -- at the time, had four separate
14 flight programs. They had a flight program which we
15 referred to as Hangar 6 in Washington. And that was, for
16 all practical purposes, kind of a VIP-type of arrangement.
17 We had contracts with several government agencies. One in
18 particular was the NTSB, Go Team. We would provide them
19 with transportation as soon as possible.

20 We provided transportation for the air traffic
21 controllers, the first ones to go back into New Orleans
22 after Katrina. They operated in accordance with the 135
23 certificate.

24 The Tech Center in Atlantic City, where they did a
25 lot of experimentation, they also had a flight program. The

1 flight inspection, as I just described to you, and the
2 flight standards, which conducts recurrent training of all
3 its inspectors on a quarterly basis and has -- right now
4 they have six King Airls down here in Fort Worth that they
5 use for recurrent training.

6 Our office was responsible for overseeing those
7 operations. Some of them, the Hangar 6 Flight Inspection
8 and the flight standards also all carried, or held, 135
9 certificates.

10 So we were responsible for oversight to ensure
11 that the government, or the FAA did, in fact, comply with
12 all the federal regulations for a 135, but also office and
13 management and budget had several documents that they put
14 out that required government agencies to operate and report
15 in a certain way.

16 And being a subdivision of the DOT, DOT had an
17 order -- I believe it was 8060.5C, which directed operators
18 of aircraft within the DOT on how they would operate and how
19 they would report.

20 And our office was responsible for oversight to
21 ensure that everybody met all of the requirements and
22 directives of the government.

23 And also, we were the repository, or we collected
24 all of the reporting information that got forwarded to GSA
25 and was provided to and shared with Congress.

1 Q. I see that also you had an additional set of
2 duties from 2001 to 2011 as the chairman of the Interagency
3 Committee for Aviation Policy Safety Standards and Training
4 Subcommittee.

5 Could you explain briefly what that involved?

6 A. Okay. I was not the chairman. I was the FAA
7 representative --

8 Q. Oh, I'm sorry. Thank you.

9 A. -- to ICAP. ICAP was set up at the direction of
10 O&B to GSA to set up a system or a forum -- or platform,
11 whereby all government agencies that operated aircraft would
12 share best practices. They would conduct safety audits,
13 things of that nature.

14 I became the chairman of the Safety Standards and
15 Training Subcommittee, and our job was to go out after an
16 accident with an operator of one of the agencies, and we
17 would take a look at the structure and the organization,
18 their safety management system, to see if there was any
19 holes in that or fault with the management or oversight of
20 that that might have contributed to an accident.

21 And we did the State Department. We did NASA. We
22 did the Department of Justice. We did Border Patrol. We
23 did Customs. Just about everybody.

24 At one point -- it did not have to be an accident.
25 They could ask us to come in and do a safety audit for their

1 own edification.

2 In a couple of instances, there was a new director
3 of the program, we got a letter from one that says, "I don't
4 know what I have here. Please come in, do an audit and tell
5 me what I've got." And we did that. So I was chairman of
6 that for, I guess, seven or eight years, nine years.

7 Q. All right. And then, it sounds like you retired
8 from the FAA around 2011?

9 A. I did.

10 Q. Twenty-four years with the FAA?

11 A. Correct.

12 Q. But did you continue to interact with the FAA for
13 the, what, next 11 years after that?

14 A. Yes.

15 Q. And what have you done with the FAA to interact
16 with them --

17 A. I'm a contract instructor for the FAA at their
18 academy in Oklahoma City.

19 Q. And what do you teach there at the academy?

20 A. I teach various subjects. Currently, I am
21 teaching airman certification and air carrier certification.

22 Q. And does any of that instruction involve training
23 programs?

24 A. It does.

25 Q. Could you tell us a little bit about what the FAA

1 has you do to instruct about training programs?

2 A. I'm instructing primarily new inspectors on the --
3 we kind of take them through the approval process for an air
4 carrier's training program and how it's constructed, the
5 different phases, and the gates that they have to pass
6 before they move on to the next phase of the certification.

7 And as part of that, when we talk about the
8 curriculum, we talk to them about the integration of
9 differences training. We take them through the AEG
10 organization, what they do, how they do it.

11 We show them a report. Normally, we pull up
12 something like the King Air or the Hawker and show them the
13 differences and how the operator will then come up with the
14 operator's minimum requirement for differences training and
15 how that the -- then, as the inspector, how they need to
16 look at that to ensure that that information from the AEG
17 FSB is incorporated into the training.

18 Q. Now, where do you get your information to teach
19 the students that you are instructing about these
20 differences?

21 A. The FAA provides me with a curriculum.

22 Q. And I take it they have confidence in your ability
23 to teach those subjects to the students there?

24 A. Apparently, because they have periodic reviews
25 where they sit in on my training and grade me.

1 Q. Now, is part of the curriculum there how to create
2 the training program for different types of aircraft and
3 things like -- of that nature?

4 A. Basically, the training structure is similar.
5 Whether you're flying Cessna 210s or whether you're flying
6 Triple 7s or anything in between the structure is basically
7 the same.

8 Q. And I take it, then, you have students who go on
9 to become FAA inspectors when they finish taking --

10 A. When they finish all of the required training,
11 they become inspectors.

12 Q. Could they go and inspect, for example, a 737 MAX?

13 A. They could go in and inspect a 737 MAX if they
14 were looking at the structure. Unless they were qualified
15 in a 737, they would probably have difficulty trying to
16 determine whether all of the information that would have
17 been required would be incorporated in the curriculum.

18 The FAA has kind of two parallels, one is general
19 aviation and one is air carrier. The air carrier inspectors
20 would have a lot more information on that. The air carrier
21 inspector that would do that would be the ones that are type
22 graded in the 737 or have experience with transport category
23 aircraft.

24 Q. All right. Well, thank you for that information
25 about your background.

1 Now, I want to turn to a couple of questions that
2 came up about your expert opinion. I think you said you
3 were not an expert in the details of the software involving
4 MCAS; is that correct?

5 A. Correct.

6 Q. But do you believe that you are in a position to
7 assess the consequences that come from MCAS malfunction or
8 uncommanded MCAS activation?

9 A. I believe I'm qualified to make an assessment on a
10 lack of information and its effect on training.

11 Q. And let's focus, then, on that effect on training.

12 Could you explain why you have an ability to
13 assess how the uncommanded MCAS activation or something
14 along those lines would have implications for training
15 programs or could have been prevented by training programs?

16 A. Basically, it would go back to my 50 years of
17 experience in aviation, being exposed to different training
18 programs at different companies where I was a pilot, being
19 in charge of training, as I was with the oversight -- or the
20 flight program, looking at training programs to approve
21 them.

22 My experience with certificating curriculums and
23 simulators for Simuflite have kind of all added up. So it's
24 hard to say just one particular thing. It's just a
25 culmination of my experiences.

1 Q. Now, there was a lot of question about a phrase
2 that came up in your report. Something about a "complete
3 dataset" regarding MCAS.

4 Could you explain what you meant when you used
5 that phrase, "a complete dataset"?

6 What kind of information were you referring to?

7 A. What I was referring to was all the appropriate
8 and available data.

9 Q. All right. And I know there was some questions
10 about what's in the Statement of Facts here.

11 Were you familiar with paragraph 14 in the
12 Statement of Facts that says, "Boeing Employee 1 and Boeing
13 Employee 2 understood that the FAA AEG relied on them" --
14 that is the two Boeing employees -- "as members of Boeing
15 737 MAX technical team, to identify and provide to the FAA
16 AEG all information that was relevant to the FAA AEG in
17 connection with the FAA AEG's publication of the 737 MAX FSB
18 report, including information that could impact the FAA
19 AEG's differences training determination."

20 I know that was long there, but were you familiar
21 with that?

22 A. Yes.

23 Q. So when we're talking about a complete dataset not
24 getting to the FAA AEG, what is your understanding of whose
25 job it was to get that complete dataset?

1 A. My understanding is that the manufacturer would be
2 the one that would supply that information to the FAA AEG.

3 Q. And we've been talking to you about a complete
4 dataset. That makes it sound like there's a lot of
5 information and so forth that might be at issue.

6 Is there one piece of information that would have
7 been critically important to the FAA AEG when they were
8 trying to come up with the training program in connection --
9 in connection with MCAS?

10 A. I believe, had they known of the expanded
11 parameters of MCAS, that it would have had quite an impact
12 on how they would react and how they would judge it.

13 Q. And I think everyone -- it's your understanding
14 that everybody agrees that Mr. Fortner did have access to
15 that information?

16 A. I believe so, yes.

17 Q. There was also some questions I think from the
18 Boeing attorneys about how, well, look, after the Lion Air
19 crash, there were these documents that went out. So people
20 knew more about MCAS at that point in time.

21 And, by golly, in the next couple of months, the
22 FAA didn't go to flight simulator training and so forth. I
23 guess it would be about a four-and-a-half month period of
24 time.

25 Could you give us some sense of how long it would

1 take the FAA to decide to go from, let's say, a Level B
2 determination, to a Level D determination in the ordinary
3 course of business?

4 A. I would only be hazarding a guess, and I wouldn't
5 want to do that.

6 Q. All right. You know that in the event -- how long
7 did it take the FAA, ultimately, to go with the Level D
8 flight simulator training for the 737 MAX?

9 A. I don't remember the time frame that was involved
10 between the accidents and the actual date -- I don't recall
11 a date on that particular document where they finally said,
12 you know, "We got to have sim training."

13 MR. CASSELL: If I can just confer with counsel?

14 BY MR. CASSELL:

15 Q. It wouldn't have been a four-and-a-half month
16 process, though. It would have been longer than that; is
17 that a fair statement? In general?

18 A. In a critical situation, they may have been able
19 to move quicker.

20 Q. Right.

21 Well, so for example, here's something that I
22 think we talked about in direct examination that's relevant
23 to this.

24 It was on January 7th, 2020, that Boeing announced
25 that they thought simulator training was needed for the 737

1 MAX. Do you recall that announcement from Boeing?

2 A. Yes, I do.

3 Q. And if we go back to the Ethiopian Airline crash,
4 I believe that was in March of 2019.

5 A. Yeah.

6 Q. So the Boeing process to evaluate all this took,
7 if my math is correct, more than nine months; is that a fair
8 statement?

9 A. Sounds right.

10 Q. And Boeing, I take it, has a lot of resources
11 available to it if it wanted to rapidly come forward with a
12 new training program?

13 A. I believe they do.

14 Q. I also now want to direct your attention to
15 families' Exhibit -- well, let's see. Yeah, if we could
16 look for a moment at families' Exhibit 7. I don't know if
17 that document is available.

18 It's a CANIC, Continued Airworthiness Notification
19 on March 11, 2019.

20 A. Yes, a two-page document. Number 7.

21 Q. Yeah.

22 THE COURT: Okay. We need to take a break.

23 MR. CASSELL: Right. Thank you, your Honor.

24 (The proceedings adjourned at 3:00 p.m.)

25 (The proceedings reconvened 4:10 p.m.)

1 MR. CASSELL: All right. Thank you. And thank
2 you, your Honor. We estimate we have about just 10 more
3 minutes of cleanup here, and then we will be finished.

4 BY MR. CASSELL:

5 Q. There were a lot of questions, Mr. Keyes, about
6 what happened after the Indonesian crash, and then before
7 the Ethiopian crash, and whether the FAA was jumping in to
8 do anything during that time.

9 Did the FAA ultimately order flight simulator
10 training for the 737 MAX?

11 A. Yes, they did.

12 Q. And so, during that intervening four months -- I'm
13 wondering if you would take a look at Exhibit 7, which has
14 previously been entered into evidence. This is the CANIC,
15 or Continued Airworthiness Notification.

16 I notice this was on March 11, 2019. And if I've
17 done my math correctly, that is one day after the Ethiopian
18 crash, I believe?

19 A. Yes.

20 Q. All right. Now, can you take a look at this
21 document and see if it tells us anything about what the FAA
22 has been doing in the interim between the two crashes here?

23 A. Primarily, they indicate that ongoing oversight
24 activities by the FAA would include the Boeing's completion
25 of the flight control system enhancements, which provided

1 reduced reliance on procedures associated with primary pilot
2 memory items.

3 The FAA anticipates mandating these design changes
4 by AD no later than April 2019. The design changes would
5 include MCAS activation enhancements, MCAS AOA signal
6 enhancements, MCAS maximum command limits.

7 Q. Now, let me just jump right in.

8 Is there anything in there about training updates
9 that are anticipated in connection with the Boeing 737 MAX?

10 A. It just says that, "Boeing has proposed Level A
11 training impacts."

12 Q. And if I can direct your attention to the bottom
13 of page 1 there. About three lines from the bottom there is
14 a reference to, "Boeing's plans to update training
15 requirements."

16 A. Yes.

17 Q. Do you see that?

18 And what is that a reference to?

19 A. That would be obviously to providing more training
20 and more information to the flight crews through the flight
21 crew manuals to go along with the MCAS changes.

22 Q. So as of March 11, 2019, Boeing was trying to
23 update its flight manuals and training requirement
24 recommendations? Is that the gist of this document?

25 A. That's the way I would read that.

1 Q. But, sadly, I take it, those updates were not in
2 effect on March 10, 2019?

3 A. Correct.

4 Q. You were asked a question about whether Boeing
5 intended to cause the planes to crash. I just wanted to
6 clarify what you said on that.

7 I take it that from what you have read in the
8 Statement of Facts, Boeing, through its representatives, was
9 intentionally lying to the FAA about safety issues?

10 A. I believe so.

11 Q. And were those safety issues potentially
12 life-or-death issues?

13 A. In light of the information, yes.

14 Q. You were asked about some questions about whether
15 you had ever worked for the AEG. Is it necessary for you to
16 have actually worked in that agency for you to offer expert
17 opinions about how it operates?

18 A. I don't believe so.

19 Q. How about, is it necessary for you to work in the
20 FSB to offer expert opinions in how they operate?

21 A. I don't believe so.

22 Q. Do you have specialized knowledge about the kinds
23 of subjects that we have been talking about today?

24 A. I do.

25 Q. You were asked a lot of questions about this word

1 "formula," about whether -- I'm sorry -- about whether the
2 FAA had some sort of formula for deciding whether to do
3 Level B training or Level D training.

4 I'm wondering if you could unpack what you meant
5 by the word "formula" when you were talking about that?

6 A. Basically, internal documentation that provided
7 guidance to them on how to determine what they would take
8 into consideration when determining the different levels of
9 training that would be required. That's what I would have
10 been referring to.

11 Q. And you have an understanding that, using their
12 internal documentation or whatever we call it, they
13 ultimately decided that Level B training was appropriate
14 here?

15 A. Yes.

16 Q. There were a couple of questions about some
17 documents that were issued between the two crashes. I
18 believe they were the FCOM and the Emergency AD, the
19 Emergency Airworthiness Directive. Also, I think a MOM --
20 what is it, a memo of -- memo of some sort of -- Memo To
21 Operators. Thank you. There we go -- were those
22 significant documents, in your mind, that laid out very
23 clearly what was going on with the MCAS system?

24 A. As I read it, I don't think it was all that clear.
25 I think they indicated that they were working through the

1 issues and they had not come up with anything definitive at
2 that point.

3 Q. Now, the attorney for Boeing asked you some
4 questions that involved the word "conceivable." I think he
5 said it was "conceivable" that the FAA might have gone with
6 Level B, or it was "conceivable" that they might have gone
7 with Level D, if they had gotten all the information about
8 MCAS.

9 As between those two options, do you have an
10 opinion, to a reasonable degree of aeronautical certainty,
11 as to which was more probable?

12 A. I would believe it would be more probable that,
13 had they had the full information, that they would have gone
14 with Level D.

15 Q. And I think at one point you even said it wouldn't
16 be possible for the FAA to ignore simulator training. I was
17 wondering if you could explain why, in your mind, it
18 wouldn't have really even been possible for the FAA not to
19 have simulator training?

20 A. Once again, when they started getting into their
21 own internal documentation guidelines on how to go about
22 making a determination of what level of training, the
23 definition themselves would have lent them to their decision
24 to go with the Level D.

25 Q. Now, you were asked some questions about how much

1 expertise you have regarding whether foreign operators
2 incorporate FAA guidance into their training programs.

3 I just want to clarify. Do you have actual
4 information about what the training program looked like for
5 Lion Air, Flight 610 pilots?

6 A. No, I do not.

7 Q. Have you seen a report, though, that summarizes
8 what the training was for Lion Air, 610?

9 A. Yes, I have.

10 Q. And what does that report generally indicate in
11 that regard?

12 A. That they had the training in accordance with
13 Level B.

14 Q. And would it be the same thing for the Ethiopian
15 flight 302?

16 A. It would.

17 Q. Now, you were asked some questions at the end
18 about foreseeability, what Boeing could foresee.

19 Did we ask you to undertake a review of all the
20 Boeing documentation to see what sort of things they could
21 and could not foresee?

22 A. I was given all of the documents, pertinent
23 documents, asked to review those documents, and make a --

24 Q. Let me just jump in this way. We didn't ask you
25 to give an opinion on what Boeing foresaw?

1 A. No, you did not.

2 Q. In fact, if we were going to talk about documents
3 that you reviewed, I think we mentioned this on direct
4 examination, but if we look at page 25 of the House report,
5 there was a reference there from 2015 to 2018, Boeing's own
6 test pilots had suffered potentially catastrophic
7 consequences in the way they were evaluating things,
8 information that was included in at least six separate
9 internal Boeing coordination sheets.

10 Would that potentially be the kind of information
11 that you would have looked at if we asked you to give an
12 opinion on foreseeability?

13 A. Yes.

14 MR. CASSELL: No further questions.

15 MR. JACOBS: No cross, your Honor. Thank you.

16 MR. HANEY: Your Honor, no cross.

17 We would re-urge the Court to consider a Daubert
18 challenge to this expert and striking this witness's
19 testimony.

20 THE COURT: I understand.

21 MR. HANEY: Thank you, your Honor.

22 THE COURT: Hey, can you remind me what Level C
23 training is? I know what D and B is. I cannot recall what
24 C is.

25 THE WITNESS: Basically, Level C was training

1 where they would use fixed pictures on cardboard sheets or
2 poster board where they could sit, and there was no
3 functionality to it, but they could sit and point to a dial
4 or an instrument or a control item, and say, this is next,
5 this is next, this is what I do there. And it's kind of
6 called the procedures training.

7 THE COURT: Okay. Yeah. Good. Okay. Thank you.
8 You may step down.

9 Okay. So we will start back up, then, on whatever
10 that date is at the end of August. I don't want to say it
11 because I don't want to throw it off, but it's in the
12 papers, and it's on my calendar.

13 So is there anything else we should take up today?

14 MS. BRAMMEIER: Yes, your Honor. Just briefly.
15 Tracy Brammeier. For the next dates, there are several
16 families who have reached --

17 THE COURT: Come on over here so I can hear you
18 better.

19 MS. BRAMMEIER: Yes, your Honor. Tracy Brammeier.
20 I have been liaising with the various family members of the
21 victims of the crashes. Several family members have reached
22 out to ask me if it's possible to open a conference line or
23 some other method?

24 THE COURT: No.

25 MS. BRAMMEIER: Okay. Thank you. I figured I

1 would make the request.

2 MR. CASSELL: Nothing further from the families,
3 your Honor.

4 MR. JACOBS: Just ask the Court how you would like
5 to proceed with respect to our Daubert challenge, whether we
6 should make the record about that as to this particular
7 witness or save it for the end?

8 THE COURT: Why don't you brief it as opposed to
9 making it now. That way I have it on paper.

10 MR. JACOBS: Understood, your Honor.

11 THE COURT: I'm just taking in his opinions as
12 presented by Mr. Cassell. And as I weigh his opinions, I'm
13 also obviously considering the cross-examination questions
14 that you have asked, but if you want to apply those
15 factually, what he has relied on, what his background and
16 qualifications are, which I've read the -- paragraph 1 here
17 before I got here -- and then apply it to what he is opining
18 and point that out in a written pleading, that's fine.

19 That will give Mr. Cassell a chance -- and you, as
20 well -- that will give Mr. Cassell a chance to respond. I
21 will probably wrap it all up in one order after I get
22 everything presented to me.

23 MR. JACOBS: Thank you, your Honor. And one other
24 question.

25 THE COURT: Yeah.

1 MR. JACOBS: I appreciate that the Court's
2 schedule is pretty packed, from what I can hear. Just for
3 planning purposes, I know we're starting at, I believe,
4 9:00 the 26th, and we have two witnesses scheduled that day.

5 THE COURT: Uh-huh.

6 MR. JACOBS: Does the Court anticipate the 26th as
7 being one day or do you think it could spill over to Monday?

8 MR. CASSELL: I think it's going to be a long day,
9 your Honor. We're calling our pilot who has been in the
10 simulator for the 737 and so forth.

11 And then we will also have the director of
12 Catastrophic Risk Management Center from U.C. Berkeley. I
13 would anticipate -- with no offense to Mr. Keyes -- they
14 speak a little more quickly than Mr. Keyes, but it is going
15 to be -- it's going to be a busy day.

16 THE COURT: I think his question is, is it one day
17 or is it going to be multiple days?

18 MR. CASSELL: Well, we will certainly try to do it
19 in one day. We are going to call Ms. Norton first. I don't
20 know if your Honor would start at 8 a.m. on that day?

21 THE COURT: I'm afraid to weigh in on the day.
22 What day of the week is this?

23 MR. CASSELL: It's Friday, August 26th, is what
24 we're looking at.

25 THE COURT: So you want to start at 8:00?

1 MR. CASSELL: Yes, please.

2 THE COURT: What do you say to that?

3 MR. JACOBS: We have no objections to that, your
4 Honor. I just want to know if we should try to keep our
5 schedules open for Monday and stay through the weekend,
6 rather than traveling? Whatever information we could get on
7 that would be very much appreciated.

8 THE COURT: I don't know.

9 What is your take on that?

10 MR. CASSELL: So I think that Ms. Norton is going
11 to be of comparable length to Mr. Keyes, because she's going
12 to be coming at the same issues, but from the pilot's
13 perspective, rather than an FAA official's perspective.

14 So I do -- I mean, it is interesting that
15 Mr. Keyes, as you know, does not speak quite as rapidly as
16 some of our other witnesses. I know Ms. Norton is a fast
17 talker, so I think that may produce a somewhat
18 abbreviated --

19 THE COURT: Well, do you think he should stay
20 until Monday, is really the bottom line?

21 MR. CASSELL: I mean, I will guesstimate that we
22 could put on Ms. Norton in two and a half hours, and then we
23 can put on Mr. -- Dr. Storesund in an hour. That's my
24 prediction for my direct examination.

25 THE COURT: Why don't you just stay in touch with

1 Mr. Cassell between now and then, in case something changes,
2 but we probably ought to start it at 8:30. Just to give me
3 from 8:00 to 8:30 to fit in any other thing that comes up
4 like has happened today.

5 I had to fit in a criminal case this morning,
6 because they couldn't do it yesterday. And then I had to
7 fit in this civil case for obvious reasons. So give me
8 that -- give me that buffer.

9 MR. JACOBS: Thank you.

10 Should the parties also be prepared for argument
11 that day? Is that what the Court would like?

12 THE COURT: I will give you some time to argue if
13 you want, yes.

14 MR. JACOBS: Thank you, your Honor.

15 THE COURT: But I probably won't be ruling that
16 day.

17 MR. JACOBS: Of course. Of course. Thank you,
18 your Honor. Nothing further from the government, your
19 Honor. Thank you.

20 MR. HATCH: Thank you, your Honor. Nothing
21 further from Boeing.

22 THE COURT: Okay. Thank you. Well, you all have
23 a very nice weekend.

24 (The proceedings adjourned at 4:30 p.m.)
25

REPORTER'S CERTIFICATE

I, ZOIE WILLIAMS, RMR, RDR, FCRR, certify that the foregoing is a true and correct transcript from the record of proceedings in the foregoing entitled matter to the best of my ability to hear.

Further, due to the COVID-19 pandemic, some participants are wearing masks, and/or appeared via videoconferencing, so proceedings were transcribed to the best of my ability.

I further certify that the transcript fees format comply with those prescribed by the Court and the Judicial Conference of the United States.

Signed this 7th day of August, 2022.

_____/s/ Zoie Williams_____
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